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ABSTRACT

In evaluating the effect of AACR2 (Anglo American Cataloging Rules 2) on the university library catalog, this report reviews the various forms of the traditional card catalog in terms of technical feasibility and cost and compares the processing under the current system with the different alternatives. In the first part of the report, the task force looks at five possible options: continuing the existing catalog, an add-on card catalog, a COM addition of film or fiche, or an online option. Part II projects the effects of the alternatives on three important areas: the creation of the catalog, the maintenance of the catalog, and its use by the library staff. The appendices include a report on catalog growth, miscellaneous cataloging costs and statistics, and a description of a simulated link-production time study. (RAA)

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REPORT OF THE
TASK FORCE ON COST ANALYSIS AND TECHNICAL CONSIDERATIONS

16 July 1979

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FINAL REPORT OF THE TASK FORCE ON COST ANALYSIS AND TECHNICAL CONSIDERATIONS

INTRODUCTION

The Task Force Report is divided into two major parts. Part I describes the production costs and the technical feasibility of the various options with regard to the form of the catalog after January 1, 1981. Part II projects the effects of the alternatives on three important areas: the creation of the catalog, the maintenance of the catalog, and the use of the catalog by library staff. Part III, the appendices, includes a report on catalog growth, various cataloging costs in tabular form, and other items of interest.

It will be helpful at this point to restate the task force charge as it will introduce the remainder of the report and clarify the objectives of the group. In its report to Mr. Frantz on November 21, 1978, the Committee on the Future of the Card Catalog recommended the appointment of three task forces or subcommittees to examine various aspects of the question, "should the University of Virginia Library close its card catalogs in 1981?"

The Task Force on Technical Considerations and Cost Analysis was given a two-part charge:

- 1) To review the various forms of the traditional card catalog in terms of technical feasibility and cost.
- 2) To compare costs of processing, especially cataloging, under the current system with the different alternatives.

The report which follows covers both these areas in some detail. In Part I, the Task Force looks at five possible options for the form of the card catalog beginning in January 1981. These options are broken down into three categories:

- A. The card option: continued or add-on
- B. The COM option (add-on)
 1. Microfiche
 2. Microfilm
- C. The on-line option (add-on)

For each alternative the task force has considered the following: equipment needed, technical feasibility, and production costs. Determining or predicting approximate costs was not always straightforward or even possible in some cases. The add-on on-line catalog option, for example, was virtually impossible to cost out. There are few cost figures available, and the task force could only obtain vague guesses and estimates from the Administrative Computing Center staff. Fairly good estimates can be made for equipment, but development costs are difficult to project. We do not know exactly how long it would take to design and implement an on-line catalog, although two to three years is one estimate given by the Computing Center.

Three important points did emerge from our discussions with Administrative Computing personnel regarding an on-line catalog. First, such a catalog will be

quite expensive in terms of equipment and development costs. Second, it is technically feasible at this date to develop an on-line catalog. The only things preventing this at the moment are the high cost and the present commitments of the Computing Center staff to other projects, such as the on-line circulation system. Finally, the Computer Center staff has indicated a commitment to develop such a system for the library after current projects are completed and if the resources (funding and staff) can be obtained. Their support and enthusiasm cannot be emphasized enough, especially since an on-line catalog appears to be the number-one choice among library staff for the eventual form of the catalog.

The costs for each alternative have been listed for comparison in a table at the end of Part I. The Task Force, however, does not attempt to make a recommendation based on these and other figures in the report. The charge did not include the task of picking a "best" alternative based on cost. It will be up to the Committee on the Future of the Card Catalog to examine these figures and, in consideration with other facts, make a recommendation to Mr. Frantz and Directors' Council.

Part II is an attempt to examine the costs and effects of the alternatives on staff use of the catalog, as well as effects on the creation and maintenance of the catalogs. The entire cataloging process is not examined since many aspects of the process will not be affected by a change in the format of the catalog. Examined are the several areas that could be affected in one way or another by the new rules combined with the possible closing of the card catalog. Besides catalog maintenance, which would be affected by a change in catalog format, the report looks closely at some aspects of the creation of the catalog, in particular at the creation of links and cross-references. It is not an understatement to say that this issue is one of the most critical questions involved in deciding whether or not the catalog should be closed. The creation of links was another area where cost figures were difficult to obtain. We have never produced links before, so it is hard to determine the effects of making links on the cataloging process.

The consideration of how closing would affect the use of the catalog for each department was both frustrating and educational. Interviewing staff, writing and revising statements, and collating into one final report was a long and tedious project, not unlike the other part of the report. The frustration arises from the fact that it is difficult if not impossible in most cases to assign costs to catalog use. After much deliberation, it was decided to use estimates of workload involved in searching the catalog, rather than to try to assign cost figures. The information that it may take two or three times as long to search the catalog, if the catalog is in two or three parts, is just as useful as a cost figure assigned to the task. As one reads the section on the use of the catalog, and learns how each area would be affected by a closed catalog, it becomes apparent that the time estimates are in fact more meaningful than cost figures would be. This portion of the study proved very educational in providing an overall picture of catalog use by staff.

Before concluding the introduction four other topics need to be briefly addressed. The first is definitions. For its own uses, the Task Force developed

three definitions which describe the various types of catalogs. Although these terms are not often explicitly used in the report that follows, their use is implied throughout.

Add-on catalog: A second catalog in addition to a closed card catalog, incorporating AACR II rules and including either materials cataloged after Day 1 or the OCLC archival tape and all materials cataloged after Day 1.

Interim catalog: A temporary add-on catalog, designed to serve no longer than about 5 years after Day 1.

Eventual catalog: A projected catalog which is accepted as the goal of all work on catalog form and content. Examples include: 1) an on-line catalog that accesses all the U.Va. collections; 2) a frozen card or book catalog plus an add-on on-line catalog which incorporates more and more material with time.

The primary reason for the creation of these definitions is that there is often confusion among staff members when asked what kind of catalog they would prefer to see after January 1, 1981. For example, some persons could live with a COM catalog, as long as it were an "interim catalog" and not the "eventual catalog." Consequently, the Task Force cautions that the above definitions be kept in mind when reading this report.

In projecting cost figures, both for the various alternatives and for maintenance and creation of the catalog, various dates are used. For example, the maintenance report uses fiscal years, beginning with 1979-80, while the production and equipment report (Part I) uses calendar years, beginning in 1981, Year One. Please note the difference when reading the report. When comparisons are made of alternatives the 1981-85 figures are used.

The central focus of this report is on the options which are being considered for the public catalogs here in Alderman Library. A separate question is that of the options for the catalogs of the branch libraries. It was felt that this question should be deferred to the main committee for its consideration. The use of branch library catalogs by branch staff is assumed to be similar to the use of Alderman catalogs, but this and other branch considerations will warrant further examination. In Part II.C of this report, "Staff Use of the Catalog," the investigation of branch library staff use of a catalog concerns their use of the Alderman catalog.

Finally, the "Report of the Growth of the Catalog," which is attached as an appendix to many copies of this report, needs to be mentioned. One reason that the Library of Congress decided to close its catalog is the increasing cost of its maintenance, both in terms of money and staff time. Other large research libraries, like our own, must also consider this question and determine whether or not they can afford to continue to maintain a large growing catalog. The question of catalog growth is a logical extension of this area, and the Task Force has done a detailed study of the growth of the Alderman Library catalogs. Although it does not easily fit into the Task Force's charge, and therefore is

not a part of the main body of the report, it has been attached as a supplement to the report and should be carefully considered by the Committee on the Future of the Card Catalog.

PART I

OPTIONS: EQUIPMENT COSTS, PRODUCTION COSTS, AND TECHNICAL FEASIBILITY, 1981-85

PART I

OPTIONS: EQUIPMENT COSTS, PRODUCTION COSTS, AND TECHNICAL FEASIBILITY, 1981-85

Introduction

The following discussion of the various costs of equipment and of catalog production necessarily takes into account the technical feasibility of each option. Indeed, because costs are sometimes vaguely defined or unavailable, the discussion in some cases never goes beyond suggesting ways of obtaining the costs while considering technical feasibility. Caveats and parameters often take the place of data, particularly with regard to any option which includes an on-line catalog.

This part of the report is divided into three sections, each dealing with a physical form, and following the outline of catalog options given in the general introduction. A table at the end of the third section lists the total costs for comparison. Section A, on the card option, treats the continued card catalog and add-on catalog options together. Section B, on the COM option, has separate discussions of fiche and film because equipment and production considerations vary quite a bit between the two microforms. It is the most detailed section because the variations under this option are the most complex of all. Section C, on the on-line option, also discusses some variations while presenting what data are available.

All costs are expressed in an approximation of the real value of the dollar in 1979. Inflation will of course enlarge the dollar figures each year, without, however, changing the real values of the expenses.

No attempt is here made to discuss the costs of either 1) link options, which are dealt with in Part II.A.1. of this report, or 2) branch library options with regard to their own catalogs. This discussion attempts to illustrate the problems of costing various options for the union catalog in Alderman Library.

Figure 2 details an estimate of 47 reader stations required for a COMCAT.

A. The Card Option

Should the catalog be continued in card format, either as one catalog or as a closed catalog plus an add-on catalog, there will be enough space in the existing catalog cabinets to hold some five more years of card production (until about October 1984 for the Alderman Author-Title catalog. See "A Report on the Growth of the Card Catalog," an appendix to the Task Force report). At about that time it may be necessary to purchase additional cabinets. There is room in Memorial Hall for another entire range of eight 72-drawer cabinets (at \$1850 for each cabinet).

Some figures are drawn from Part II.A of this report. Cards from OCLC cost \$15,586 for 1978/79. This figure is multiplied by five to express the total 1981-85 cost in 1979 dollars, or \$77,930. The cost of chocking-in OCLC ship-

ments is estimated at \$6420 for 1978/79. Likewise, the labor cost of filing on-order slips into the public catalog is estimated at \$2253 for 1978/79.

Non-OCLC card production will of course continue: non-Roman cards, local cross references, replacement of missing or damaged cards, Rare Book cards, and the like. Such costs include typing and copying labor, card stock, the purchase of LC copy, and the like. The labor costs (excluding the Slavic section) are about \$11,059 for 1978/79. Card stock and related expenses total \$7,130 for 1978/79.

The maintenance of the card catalog is covered in Part II.B. of this report but some relevant figures are included here. All are multiples of the estimated 1978/79 labor costs.

Some costs depend to a large extent upon whether the cards continue to be interfiled in a continued catalog or are filed in an add-on catalog. Foremost among these are the labor costs of arranging, filing, revising, and shifting. Arranging would itself continue to take about the same time under either alternative. Filing time, however, would be shortened in the small file of an add-on catalog, as would revising time. Shifting would be required more and more often as an interfiled catalog approached capacity, but in an add-on catalog shifting would be a minor problem once the closed portion of the catalog were consolidated in one massive shift. How these variations are weighed of course depends in part upon whether either alternative is considered an interim or permanent catalog. For instance, should an add-on card catalog be continued indefinitely, the costs described in this paragraph would rapidly become similar to those of a continued, unclosed catalog.

The estimated total cost for 1978-79 for arranging is \$16,000, or \$80,000 for 1981-85. The estimated cost for filing and revising for 1978-79 is \$64,000, or \$320,000 for 1981-85. The cost of shifting is of course indeterminate, but the cost of the 1978-79 shift of Alderman's catalog is included.

Unaccounted for are costs dependent upon which options are chosen with regard to AACR II, specifically those relating to in-house card production such as links.

B. The Add-On COMCAT Option

The following data are used in all COMCAT calculations:

1. approximately 50,000 titles are added annually
2. 5.13 records are generated, on the average, for each title (from a random sample of the OCLC archival tape). Since a card shelflist will be provided, 4.13 records is the figure used in the following calculations. Thus the full bibliographic record would be necessary at least at the main entry.
3. thus, 206,500 records are generated each year, and 1,032,500 for 5 years.
4. the archival OCLC tapes are estimated to contain 275,000 titles by January 1981, or 1,137,750 records.

All cost figures are quite approximate. In the fiche calculations, production costs are probably low and processing costs high, for instance.

1. Fiche COMCAT

Calculations are made for three variations: 1st year costs, total 5-year costs, and total 5-year costs including the OCLC archival tape in the data-base. Each of these three is further divided into columns for fiche generated at 2000 records per fiche and at 4000 records per fiche. Format options which allow truncated or brief entries would allow more records to be fitted on each fiche. A rough idea of the maximum effect truncation or brief entry would have can be obtained from the 4000 records per fiche columns. No cross references or links are accounted for.

As 2000 records per fiche implies that 104 fiche will be generated each year (or 52 for 4000 records per fiche), the number of fiche added in each period used in the tables following are:

	2000 per fiche	4000 per fiche
Annual	104	52
Semianual	52	26
Bimonthly	17.33	8.67
Monthly	8.67	4.33
Weekly	2	1

Calculations for selected 1st year figures to demonstrate how the data are used are included as Figure 1 to this part of the report. Each master fiche (generated by the COMCAT program) costs \$1.50 and each copy of a master fiche costs \$0.20. The calculations for the number of master fiche generated under each alternative do not necessarily take into account that a partial fiche must count as a full fiche (11.5 fiche are really 12 fiche). The splitting of the catalog into author, title, subject, and perhaps shelf list sorts would of course add to the number of such "extra" fiche.

All calculations are straight-line. That is, the same increase is postulated for each time period. The formula $\frac{n(n+1)}{2}x = \text{sum}$ is used for all series of the form $x + 2x + 3x + \dots + nx = \text{sum}$.

For processing costs, the last run after one year is estimated to cost \$500, after one week \$25, and after one month \$50, with other periods within the year estimated in round numbers. The last run after five years is estimated to cost \$6000 without the archival tape and \$12,000 with the archival tape.

Included in the total costs in Table 2 are costs for production of master fiche, copies of the master fiche and the processing costs (computer central processor, memory and so forth). To each particular alternative total cost must be added the costs of furniture and equipment, the costs of card production for non-machine cataloging, the costs of shelf list cards (at 3.6¢ each, or \$1800 per year and \$9000 for five years), the costs of serials

holdings maintenance and old card catalog maintenance, and the cost of on-order information input (either filing into the old card catalog or input to the data base). See Table 3 on page .

It should be noted that many COMCAT costs will come officially directly from the Computer Center budget and not from Alderman's budget. This does not mean, however, that these costs can be ignored in comparing one option with another, because any extra money needed does come out of the overall University budget.

The 5 year production costs including the archival tape are calculated as follows. Using the 50,000 titles per year estimate, and thus 275,000 records on the tape, or 1,137,750 entries, by 1 January 1981, gives 569 fiche required to hold the titles on the tape at 2000 records per fiche and 285 fiche at 4000 records per fiche. I have chosen to treat the archival tape as if it were a cumulation at the end of 1980, so that at start-up there would be 569 or 285 rather than 0 fiche. Thus the cumulations (but not the cumulative supplements) would be much larger. The formula for determining the number of master fiche produced under each alternative is:

n = number of cumulations in 5 years
 x = number of fiche added at each cumulation
 sum = total number of fiche produced over 5 years

As $(569+x)+(569+2x)\dots+(569+nx) = \text{sum}$ $(285+x)+(285+2x)\dots+(285+nx) = \text{sum}$
 then $569n + \frac{n(n+1)}{2}x = \text{sum}$ OR then $285n + \frac{n(n+1)}{2}x = \text{sum}$

Cost for the various cumulative supplements is determined by multiplying the 1-year figures by 5.

Furniture and equipment cost estimates

Each reader station would require a table, a chair, and, in the case of microfiche, a fiche cabinet or holder. Some stations could of course be standing stations and some furniture already owned by the library could be used, but these figures will give at least a rough idea of the costs involved. Any rewiring necessary would have to be costed by a contractor.

Minimum cost per chair	\$ 30
Minimum cost per table	36
Representative reader and lens (Bell & Howell SR 900)	220
Fiche holder (1020 fiche, by Ring King)	<u>161</u>
Total per station	\$447
for 47 stations	\$21,009

In addition, protective mylar sleeves for individual fiche cost about 10¢ each. Also, a few fiche reader/printers would probably have to be supplied

KEY:

#master
Cost of
master and
50 copies

OPTIONS:
Cumulations with
or without
supplements

10
TABLE 1 A. PRODUCTION COSTS BY OPTION -- Fiche COMCAT

	1st YEAR		5 YEARS		5 YEARS WITH ARCHIVAL TAPE IN DATA BASE	
	2000 records per fiche	4000 records per fiche	2000 records per fiche	4000 records per fiche	2000 records per fiche	4000 records per fiche
WEEKLY	2756 \$31,694	1378 \$15,847	67,860 \$780,390	33,930 \$390,195	215,800 \$2,481,700	107,900 \$1,240,850
MONTHLY	677 7,786	338 3,893	15,856 182,459	7,933 91,230	50,006 575,069	25,003 287,535
MONTHLY, with a weekly cum. suppl.	853 9,810	426 4,905	16,746 192,579	8,373 96,290	50,886 585,189	25,443 292,595
BIMONTHLY	364 4,186	182 2,093	8,058 92,667	4,029 46,334	25,128 288,972	12,564 144,486
BIMONTHLY, with a weekly cum. suppl.	672 7,728	336 3,864	9,598 110,377	4,799 44,189	26,668 306,682	13,334 153,341
SEMIANNUAL	156 1,794	78 897	2,860 32,890	1430 16,445	8558 98,325	4275 49,163
SEMIANNUAL, with a weekly cum. suppl.	1560 17,940	780 8,970	9880 113,620	4940 56,810	15,570 179,055	7785 89,528
SEMIANNUAL, with a monthly cum. suppl.	520 5,980	260 2,990	4680 55,890	2340 27,945	10,370 119,225	7785 59,628
ANNUAL	104 1,196	52 598	1560 17,940	780 8,970	4405 50,658	2203 25,628
ANNUAL, with a weekly cum. suppl.			15,340 176,140	7670 88,205	18,185 209,128	9093 104,564
ANNUAL, with a monthly cum. suppl.			4945 56,868	2473 28,434	7790 89,585	3895 44,793

TABLE 2: TOTAL FICHE COMCAT COSTS (Production plus Processing)

OPTIONS: Calculations with or without supplements	1st YEAR		5 YEARS		5 YEARS WITH THE ARCHIVAL TAPE IN THE DATA BASE	
	2000 records per fiche	4000 records per fiche	2000 records per fiche	4000 records per fiche	2000 records per fiche	4000 records per fiche
WEEKLY	\$45,339	22,995	1,557,387	783,563	4,050,816	2,017,847
MONTHLY	11,086	5,693	344,240	182,680	942,550	469,316
MONTHLY, with a weekly cum. suppl.	13,732	7,466	357,560	191,545	955,870	478,181
BIMONTHLY	5,986	2,981	187,119	92,734	476,423	238,938
BIMONTHLY, with a weekly cum. suppl.	14,346	8,798	229,169	121,819	512,473	262,023
SEMIANNUAL	2,419	1,272	67,015	32,945	165,450	83,288
SEMIANNUAL, with a weekly cum. suppl.	24,239	15,332	176,115	103,245	274,550	153,588
SEMIANNUAL, with a monthly cum. suppl.	7,243	4,534	91,135	49,225	189,570	99,598
ANNUAL	1,696	848	36,940	17,720	87,652	44,628
ANNUAL, with a weekly cum. suppl.			263,635	132,645	314,353	159,603
ANNUAL, With a monthly cum. suppl.			92,470	46,185	143,188	73,093

FIGURE 1

First year calculations to illustrate methods:

Production cost for various cumulations (2000 records per fiche):

Weekly:

$$\frac{52(53)}{2} \times 2 \text{ fiche per week} = 2756 \text{ fiche per year} \times \$1.50 \text{ per fiche} = \$4134 \text{ to produce master fiche.}$$

$$\text{Copies: } 50 \times 2756 \times \$0.20 \text{ per fiche} = \$27,560$$

$$\text{Total: } \$31,694$$

Monthly:

$$\frac{12(13)}{2} \times 8.67 \text{ per month} = 676 \text{ or } 677 \times \$1.50 = \$1014$$

$$\text{Copies: } 50 \times 677 \times .20 = \$6770$$

$$\text{Total: } \$7784$$

Annual:

$$104 \times \$1.50 = 156$$

$$\text{Copies: } 50 \times 104 \times .20 = \$1040$$

$$\text{Total: } \$1196$$

Processing cost for various cumulations:

Weekly:

\$500 last run - \$25 first run = \$475 in cost added by 51 cumulations. Therefore $475 \div 51$ gives the additional cost each week of \$9.31:

$$\frac{51(52)}{2} \times 9.31 = \$12,345 \text{ plus the weekly base cost of } 52 \times \$25 \text{ gives the total of } \$13,645$$

Monthly:

\$500 - \$50 first run = \$450 in 11. Therefore $450 \div 11$ gives \$40.90. $\frac{11(12)}{2} \times 40.90 = \$2700.10$ plus $12 \times \$50 = \$3300.10$

Annual:

$$\$500$$

FIGURE 2Suggested locations of reader stations (for fiche COMCAT)

This is of course a 'Phase 1' estimate. More stations could be added.

Alderman: 8 readers for Memorial Hall
6 for Cataloging (1 per section)
5 for the stacks
5 for Bibliography
2 for Acquisitions
1 each for the Reference room, Public Documents, Interlibrary Loan,
Rare Books, the Reserve Book Room, and Area Collections
(total: 6)

Branches: 6 for the science branches
2 for Sci-Tech
5 for other branches (Education, Fine Arts, GSBA, Music, Commerce)

Total: 47

This total is an estimate both of reader stations and of the number of copies of the catalog required. Two more copies of the catalog are required, however, for Clemons, where there will already be an adequate number of readers. The figure used in the calculations of production cost for the number of copies is 50, rather than 49, for greater ease of computation.

for staff if not patron use.

A representative cassette fiche reader (30 fiche per preloaded cassette), the Bruning 95, costs so much more (\$3300 per unit-reader/printer \$6500 per unit, plus yearly maintenance of \$900 per unit) that it cannot be considered against a standard reader.

Maintenance of the Bell & Howell could most likely be handled by library staff.

2. Film COMCAT

As the University's Computer Center does not at present have the equipment to produce a COMCAT on film, such would have to be obtained from a commercial vendor. A specific set of parameters must be submitted to vendors for estimates to get a meaningful quote. The examples of estimates in the literature have parameters that vary too much for comparisons to be made (the number of entries per record postulated varies from 3.65 to 5.5, for instance, and other variables vary in hodgepodge fashion).

Furniture and equipment cost estimates

As for the fiche COMCAT above:

Chair	\$ 30
Table	36
Reader (ROM-3)	<u>775</u>
Total per station	\$841

Calculating the number of reader stations required for film is more complex than for fiche. With fiche the entire catalog together with any supplements can be available at each reader, but with preloaded film readers the catalog would probably have to be divided between several readers because each reader has a capacity of but some 700 feet of film. Only for small files could author, title, subject and shelf list sorts be contained in one machine. The University of Toronto Library, for instance, found it necessary to use 5 ROM-3 readers to contain 5.4 million access points, using brief entries and no cross references: 1 each for author, title, and subject, and 2 for the 1.2 million full bibliographic records.

700 feet of film has about the same capacity as 112 fiche, given 40 frames per foot of film and 270 frames per fiche (48X reduction). Thus 1 reader would contain the first year of a COMCAT here easily, along with a cumulative supplement, but roughly 1 more reader per year per station would be required strictly because of the limitations in capacity.

The number of readers required is determined of course not just by the capacity of individual readers but also by the configuration chosen for an add-on COMCAT. For instance, a dictionary catalog would probably require

fewer readers to hold the entire catalog than would a catalog organized on the Toronto model. The need for a full bibliographic record sort may be eliminated for a public catalog if the full record is included at each main entry, be it author or title. This option approximates the current OCLC profile for Alderman. On the other hand, it may be desirable to include the full record at each subject added entry, which option increases the space requirement.

Also, the housing of any supplements to the add-on catalog would remain a problem. As at Toronto, a cumulative supplement could be produced on fiche, but such a supplement would require its own readers and associated paraphernalia and would itself amount to another add-on catalog. It may be possible to house the various sorts (author, title, subject, shelf-list) of a cumulative supplement in one RQM-3, however, for cumulative supplements that cover only about one year.

Maintenance for the RQM-3 when purchased in quantity is carried out by an employee of the purchaser who is sent by the manufacturer to a factory school.

C. The Add-on On-line Option

It is a widely-held opinion that the most desirable alternative to the card catalog is the on-line catalog. Among other things, such a catalog would eliminate the need for filing and would greatly facilitate searching. It is also commonly assumed that eventually the catalog will be on-line. This is a reasonable assumption, considering the clear benefits of such a catalog format and the constantly decreasing costs of maintaining large amounts of data on-line. As a matter of fact, the Administrative Computing Center has given us their assurance that, given several years for designing, programming, and testing the system and enough additional on-line storage hardware, there will be an on-line catalog in Alderman Library.

Just when this on-line catalog will become a reality is difficult to say with any precision, but it is safe to say that it will not be until considerably after 1 January 1981. The Administrative Computing Center is at this moment committed to the design and implementation of an on-line circulation system for Alderman Library. This task will occupy the time of the staff assigned to library system development at least until December of 1980. Consequently, an on-line catalog cannot be expected to be in place and functioning in Alderman Library before 1983.

This does not mean, however, that we cannot begin preliminary planning for an on-line catalog right now. There are important decisions which the library must make before the Computing Center staff can begin its work on the catalog. For example, should the on-line catalog provide only on-line searching and display, or should it also provide for on-line editing and alteration of the bibliographic records? Should the source for our bibliographic data be some shared cataloging system (like OCLC or BALLOTS), and if so, should we transfer data from that shared source to our own data base on-line or through some sort of batch process (i.e., through periodic processing of archive tapes)? How many and what kinds of search

keys should we maintain for each record? How much retrospective conversion will we do? How many terminals will we need? What will we do about non-Roman alphabet material?

Although such questions must be answered before any cost analysis can be done, there are costs which will have to be borne no matter what those answers may be. Perhaps the most costly feature of an on-line catalog will be the hardware necessary to store the bibliographic data on-line. Approximately 800 million characters of direct-access storage will be necessary to contain one million bibliographic records. An additional disk controller unit (\$55,000) and a disk sub-system (\$40,000-\$50,000) will be required to provide this storage. Communications between the library and the host computer will cost anywhere from \$9,000 to over \$100,000, depending on the method chosen. Terminal hardware will cost from \$1500 to \$2000 per terminal. Programming, design, and testing will consume approximately 3 years of a systems analyst's time (\$45,000-\$60,000). All in all, then, an on-line catalog will cost from \$179,000 to \$345,000 plus, and will require several years to develop. Certain of these items of equipment will be purchased by the Computer Center in any event as they upgrade their facilities. Which of these expenses must be shared or borne entirely by Alderman is impossible to say at this point.

D. SUMMARY

The simplest and most concise way to summarize the costs of the alternatives is to provide a table which lists for comparison the costs involved. Table 3 which follows is an attempt at providing this information for the reader who wishes to put things in perspective. Besides the production and processing costs from the preceding section of the report, the table includes other costs, such as catalog maintenance, which are derived later on in the document. If a question arises as to how certain figures were obtained, it will be necessary to refer to other parts of the report. No attempt was made to total the columns since many figures are approximations or are unavailable. It is felt that any attempt at addition of figures would result in worse approximations which are of questionable value.

TABLE 3

17

5-Year Projection of Catalog Alternative Costs
for 1981-85 in 1979 Dollars

Continued Card Catalog		Add-on Catalogs			
		Card	COM		On-line
			Fiche	Film	
OCLC Cards	75,000	75,000	9,000	9,000	9,000
Checking in OCLC cards	32,100	32,100	<32,100	<32,100	<32,100
Inputting on-order and in-process info. ¹	11,265	11,265	0	0	0
Non-OCLC Card Production Labor	58,355	58,355	58,355	58,355	58,355
Cards and Duplication	35,645	35,645	<35,645	<35,645	<35,645
Arranging	80,000	80,000	0	0	0
Filing and Revising	320,000	<320,000	<64,000 ²	<64,000 ²	<64,000 ²
Maintenance					
Added Copies and Volumes	43,000	43,000	<43,000	<43,000	<43,000
Transfers	32,500	32,500	<32,500	<32,500	<32,500
Recataloging & Corrections	37,500	37,500	<37,500	<37,500	<37,500
Shifting	>3,050 ³	<3,050 ⁴	0	0	0
COM Processing & Production	0	0	287,835 ⁵	UNAVAILABLE	177,008 ⁶
Furniture & Equipment	1,850	1,850	21,000	42,050 ⁷	61,000 ⁸
Serials Holdings	155,200	155,200	155,200	155,200	<155,200
Computer Hardware	0	0	0	0	345,000
Indexing	Unknown (Mandatory)	Unknown (Optional)	Unknown (Optional)	Unknown (Optional)	Unknown (Optional)
Catalog Use ⁹	1	3	4	4	2

TABLE 3 (Notes)

1. These figures do not include the cost of creating the on-order record. They represent only the cost of filing the record into the catalog.
2. For the on-line and COM alternatives, only a shelflist card will have to be filed. The shelflist card is only one-fifth of an average card set, and it is easier to file cards into the shelflist than it is to file cards into the catalogs. Consequently, this figure is something less than one-fifth of 320,000.
3. The last major shift of the Public Catalog cost \$3,050. It is felt that the shifting required if the catalog is to be left open will be more massive than that, but how much more is unknown.
4. The shifting required should we close the old catalog and open another will be less expensive, since it will involve only filling the drawers in the old catalog, thus creating space for the new catalog.
5. The figure here represents the total costs of processing and producing fiche on a monthly basis with weekly cumulative supplements.
6. This is the cost of producing and processing fiche bi-monthly with weekly cumulative updates.
7. Includes the cost of 50 ROM-3 microfilm readers, desks and chairs.
8. Includes the COM readers and associated furniture as well as twenty terminals at 2,000 each.
9. Here the numbers represent ranks according to which alternative is likely to be the least expensive to use.

PART II

EFFECTS OF THE ALTERNATIVES ON STAFFING AND WORKLOADS

PART II

EFFECTS OF THE ALTERNATIVES ON STAFFING AND WORKLOADS

A. CREATION OF THE CATALOG

A number of significant changes will need to be made in the procedures for the creation of the catalog to accomodate the implementation of AACR 2. For instance, a routine may need to be devised to turn LC or OCLC pre-AACR 2 catalog copy into AACR 2 cataloging. Also, all headings may need to be verified as correct AACR 2 headings by searching them in the LC Authority File at least during Year One. These and certain other changes will be necessary regardless of any decision to close the card catalog or to adopt a different format for the catalog. As such, they are not examined in this report.¹ The purpose of this report is to focus only on those aspects of the creation of the catalog which are cost-sensitive with regard to the disposition of the card catalog. These aspects are:

1. Links and cross references
2. Non-OCLC card production
3. Searching in the public catalog
4. Checking-in OCLC card shipments
5. On-order information
6. Other input into the public catalog

1. Links and Cross References

Perhaps the most significant change with regard to the creation of the catalog would be the need to construct links. If a single card catalog is continued after 1981, it will be mandatory that the Cataloging Department create links between those headings which are established in the public catalog (and perhaps also in branch library and other catalogs) in two different forms--AACR 2 and pre-AACR 2. If the card catalog is closed and an add-on catalog begun (whatever its format), links become somewhat optional.

It is impossible to predict the amount of work increase involved in constructing links. Although the production of links is similiar to current authority work, it would entail additional procedures and be done on a much larger scale. Many variables which would determine how links should be done are still unknown at this time.

Although the exact amount of work necessary to construct links cannot be predicted, a figure has been derived for the volume of links which may need to be made. Using 45,828 (1977/73) as the number of titles cataloged per year,

1. For a report on the cost of cataloging on SOLINET, see Appendix 4.

it is estimated that 6,874 links may need to be generated in Year One. Alternately, an average of 193 titles are cataloged each working day, making necessary a possible 29 links per day¹ during Year One. These numbers should gradually decrease as time passes because there are a finite number of headings in the catalog in pre-AACR 2 forms requiring links and the links for each heading that changes will have to be made but once. Theoretically, that is, over a period of years all possible or necessary links will be made and link production will drop each successive year. A recent study has estimated the ultimate number of links which will be generated by the average ARL library as 23,400 links.² If this figure and the yearly estimate of the links for this library are correct, then nearly all of the necessary links will be made during the first three and one-half years after implementing AACR 2.

It should be stressed that the production of these 29 links per day would require a great deal more work than simply typing the link cards. In order to identify which headings require links, it will probably be necessary to examine all new headings, searching in the promised LC Authority File and in the Alderman public catalog. Although the majority of links would be straight-forward links between two headings, some links will be extremely complex. The most complex instance would be the weaving together of a link and a history card. The sorting out of name changes and the composing of such a link could easily involve several hours of work. Additionally, the generation of links may mean creating links for the branch libraries. This would mean examining the entire file of entries for each heading change and also checking the main entry (in those cases in which the heading searched is an added entry) or the official serial record in order to determine which branch library catalogs will need the link. A simulated time study of link production was recently done by several members of the Cataloging Department, based on a very small sample. The tentative finding of this study was that it could conceivably take anywhere from 4 minutes, 28 seconds to 1 hour, 10 minutes to search, construct and type a two-way link. The 1 hour, 10 minute figure is based on the work involved in making links for the branch libraries. Both of these figures are probably too low, but this condition of underestimation may be offset by the speed and efficiency which could result once familiarity with the procedures of link-production is gained.³

Because no exact figures on the actual increases in the workload for the Cataloging Department with respect to links could be determined, a ranking of the various link options according to estimated workload increases was opted for. A list of the various tasks involved in authority and link work was compiled and each task assigned a weight according to the work estimated to be involved in the task. Both the difficulty and the frequency of the tasks were taken into account in assigning the weights. Also, a list was compiled of the link options. A chart was then drawn up, showing which tasks are related to each option and the corresponding weights. Based on the sums of these weights, the link options can be ranked according to relative projected workloads. The charts reflect mainly the ranking for the card catalog formats. The variances which are pertinent for automated catalog formats are discussed following the charts.

1. For the computation of these estimates, see Figure 1.
2. Report from the ARL Workshop on the "Library Catalog Cost Model."
3. For details of this time study, see Appendix 1.

Figure 1

ESTIMATED NUMBER OF LINKS TO BE MADE IN ONE YEAR (OR IN ONE DAY)

Sources of figures and percentages:

Number of titles cataloged per year: 45,828 (1977/78)
 Number of working days per year: 237 (official State Council of Higher Education figure)
 Number of titles cataloged per working day: 193 ($45,828 \div 237$)
 Number of cards per title in the author-title catalog: 2.5 ("Growth of the Card Catalog")
 Percentage of author-title entries which are name headings: 60% ("Random Sample")
 Estimated percentage of changed headings in the catalog: 15% ("Random Sample")
 Estimated percentage of recurring headings: 69% (R. English and the Univ. of Penn.)
 Estimated percentage of changed headings which recur: 10% (69% of 15%)

Calculations:

Model: (Number of titles) x (Number of cards/title in author-title catalog) x
 (Percentage of author-title entries which are name headings) x (Estimated
 percentage of changed headings which recur) = Estimated number of links

One year: $45,828 \times 2.5 \times 60\% \times 10\% = 6,874$

One day: $193 \times 2.5 \times 60\% \times 10\% = 29$

Result:

Estimated number of links per year: 6,874
 Estimated number of links per working day: 29

LIST OF TASKS INVOLVED IN AUTHORITY AND LINK WORK WITH ASSIGNED WEIGHTS

(5, difficult and/or very time-consuming work; decreasing weights to 1)

- a Search the headings used in cataloging in the LC authority file
Weight--5 (if 100% of the headings are searched)
4 (if less than 100% of the headings are searched)
- b Search the headings found to have different pre-AACR2 forms in the old catalog
AND search in the public catalog those headings not found in the LC authority file
Weight--5 (when A is 5)
4 (when A is 4)
- c Make guide cards; move old heading cards to new filing position (and probably shift the cards in several drawers near the new filing position to accommodate additional cards); make a cross-reference from the old form; redo old cross-references to refer to the new form. (Alternately: file new headings at filing position of old heading with guide card - make cross-references from new form - no need to shift cards or redo cross-references but the volume of resulting filing problems are anticipated to result in a comparable workload as shifting and redoing cross-references)
Weight--5
- d Make two-way links (including complex combined history card/links)
Weight--5 (if all links are made)
4 (if links are made only for corporate names)
3.5 (if certain categories of links are not made)
- e Make one-way links (including complex combined history card/links)
Weight--3 (if all links are made)
2 (if certain categories of links are not made)
- f Make cross-references in place of links (i.e., in addition to normal cross-reference structure)
Weight--1 (if made for both old and new catalogs)
.5 (if made only for the new catalog)
.25 (if made only for the new catalog and certain categories of cross-references are not made)
- g Make the usual cross -references as prescribed by the cataloging rules
Weight--1
- h Recreate the cross-reference structure in the new catalog for unchanged headings
Weight--2
- i Revise or pull the link when the corresponding heading is revised or all of the entries under it, withdrawn
Weight--3 (if all links are made)
2 (if certain categories of links are not made)
- j File links and/or cross-references into two catalogs (not applicable for COMCAT or on-line catalog)
Weight--2

- k File links and/or cross-references into one catalog
Weight--1
- 1 Redo old cross-references to refer to both forms of the headings--OPTIONAL
Weight--3

LIST OF LINK OPTIONS

- A. Continued catalog--all links made on corporate names; personal names interfiled at point of the new headings with a guide card--all headings are searched (alternately; personal names interfiled at the point of the old heading)
- B. Add-on catalog with two-way links--all links made
- C. Continued catalog--all links made on corporate names; personal names interfiled at the point of the new heading with a guide card--not all headings searched (i.e., the catalog itself acts as a screening device to aid in determining which headings need to be searched) (alternately: personal names are interfiled at the point of the old heading)
- D. Add-on catalog with one-way links in the new catalog and with cross-references from the old form in the new catalog
- E. Continued catalog--all links made--all headings searched
- F. Add-on catalog with two-way links--some categories of links not made
- G. Continued catalog--all links made--not all headings searched (i.e., the catalog itself acts as a screening device to aid in determining which headings need to be searched)
- H. Add-on catalog with one-way links in the new catalog and with cross-references from the old form in the new catalog--some categories of links not made
- I. Add-on catalog with cross-references added to both the old and new catalogs from the form used in the other catalog (i.e., headings are searched to determine the old form)
- J. Add-on catalog with cross-references in the new catalog from the form used in the old catalog (i.e., headings are searched to determine the old form)
- K. Add-on catalog with regular cross-reference structure

WEIGHTED TASKS INVOLVED WITH EACH LINK OPTION

OPTIONS: refer to list on p. 24

TASKS: refer to list on p. 23-24

TOTALS: 1: excluding the optional task "1"

2: including the optional task "1"

PERCENTAGES: 1: Percentage of possible total work under each option (24 equals 100%)

2: Percentage of possible total work under each option (27 equals 100%)

OPTIONS	TASKS												TOTALS		PERCENTAGES	
	a	b	c	d	e	f	g	h	i	j*	k	l**	1	2	1	2
A	5	5	5	4			1		3		1	3	24	27	100	100
B	5	5		5			1	2	3	2			23	23	96	85
C	4	4	5	4			1		3		1	3	22	25	91	93
D	5	5			3	.5	1	2	3		1		20.5	20.5	85	76
E	5	5		4			1		3		1	3	20	23	83	85
F	4	4		3.5			1	2	2	2			18.5	18.5	77	69
G	4	4		5			1		3		1	3	18	21	75	78
H	4	4			2	.25	1	2	2		1		16.25	16.25	68	60
I	5	5				1	1	2		2			16	16	67	59
J	5	5				.5	1	2			1		14.5	14.5	60	54
K							1	2			1		4	4	17	15

* Not applicable if the add-on catalog is COM or on-line

** Optional task (redoing old cross-references)

RANKING OF LINK OPTIONS (ranked according to workloads from greatest workload to least¹)

- 1st A. Continued catalog--all links made on corporate names; personal names interfiled at the point of the new heading with a guide card--all headings are searched (alternately: personal names interfiled at the point of the old heading)
- 2nd B. Add-on catalog with two-way links--all links made
- 3rd C. Continued catalog--all links made on corporate names; personal names interfiled at the point of the new heading with a guide card--not all headings searched (i.e., the catalog itself acts as a screening device to aid in determining which headings need to be searched) (alternately: personal names are interfiled at the point of the old heading)
- 4th D. Add-on catalog with one-way links in the new catalog and with cross-references from the old form in the new catalog
- 5th E. Continued catalog--all links made--all headings searched
- 6th F. Add-on catalog with two-way links--some categories of links not made
- 7th G. Continued catalog--all links made--not all headings searched (i.e., the catalog itself acts as a screening device to aid in determining which headings need to be searched)
- 8th H. Add-on catalog with one-way links in the new catalog and with cross-references from the old form in the new catalog--some categories of links not made
- 9th I. Add-on catalog with cross-references added to both the old and new catalogs from the form used in the other catalog (i.e., headings are searched to determine the old form)
- 10th J. Add-on catalog with cross-references in the new catalog from the form used in the old catalog (i.e., headings are searched to determine the old form)
- 11th K. Add-on catalog with regular cross-reference structure.

¹ based on the totals no.1 column on the preceding chart

ALTERNATE RANKING OF LINK OPTIONS (ranked according to workloads from the greatest workload to the least)¹

- 1st A. Continued catalog--all links made on corporate names; personal names interfiled at the point of the new heading with a guide card--all headings are searched (alternately: personal names interfiled at the point of the old heading)
- 2nd B. Continued catalog--all links made on corporate names; personal names interfiled at the point of the new heading with a guide card--not all headings searched (i.e., the catalog itself acts as a screening device to determine which headings need to be searched) (alternately: personal name interfiled at the point of the old heading)
- 3d/4th C. Add-on catalog with two-way links--all links made
- 3d/4th E. Continuing catalog--all links made--all headings searched
- 5th D. Add-on catalog with one-way links in the new catalog and with cross-references from the old form in the new catalog
- 6th G. Continued catalog--all links made--not all headings searched (i.e., the catalog itself acts as a screening device to determine which headings need to be searched)
- 7th F. Add-on catalog with two-way links--some categories of links not made
- 8th H. Add-on catalog with one-way links in the new catalog and with cross-references from the old form in the new catalog--some categories of links not made
- 9th I. Add-on catalog with cross-references added to both the old and the new catalogs from the form used in the other catalog (i.e., headings are searched to determine the old form)
- 10th J. Add-on catalog with cross-references in the new catalog from the form used in the old catalog (i.e., headings are searched to determine the old form)
- 11th K. Add-on catalog with regular cross-reference structure

¹based on the totals no. 2 column found on the preceding chart

Several points must be stressed with regard to the ranking of these options. The weights assigned are based on best guesses and should not be regarded as absolute. It is possible that the exact ordering of these options should be different. What emerges fairly clearly from this ranking is that it will be much more costly in terms of departmental time to create links than not to create links, although exactly how much more cost cannot be predicted. It can also be seen that the link options all tend to bunch together at the heavy workload end of the scale. It should be kept in mind that much of the work entailed in constructing links may need to be done by professional staff, the most costly labor.

The preceding rankings focus primarily on the differences between a continued and an add-on catalog, regardless of physical format. There are, however, significant differences in the workload increases depending on the format of an add-on catalog. The chart gives a relatively accurate picture of the workloads for an add-on card catalog. A COMCAT would entail similar work with the following distinctions which would change the weights assigned to the respective tasks. Given the ease of browsing in a COMCAT, it may be practical to limit the categories of links made in an add-on COMCAT more drastically than in an add-on card catalog. The actual clerical production of links may be less time-consuming with a COMCAT. Instead of typing a pattern card (or purchasing a card from LC -- provided that the wording on their linking cards is appropriate for our catalog[s]) and reproducing it for multiple catalog locations, the linking information might be typed only once for inclusion in the COMCAT database. As noted on the chart, the filing of links and/or cross-references into the add-on catalog would not be necessary with an add-on COMCAT. These differences may make it less costly to produce links for an add-on COMCAT, but it would still be more costly than not making links at all.

An add-on on-line catalog would change the picture even more significantly. Links, as such, may not be required in the add-on or closed catalogs if the on-line catalog has automated authority control. The data would still need to be input into the database; however, it may eventually be possible to input these data via a computer program, running the LC Authority File tapes against the library's archival tapes. Automated authority control would resolve the need for links from the old catalog to the new, but it may be desirable to include links in the on-line catalog, directing the user to the form of heading employed in the old catalog. This is technically feasible, provided that it is specified as a feature of an eventual on-line catalog.¹

Whether or not links are made, the usual cross-references will continue to be made. No figures are available for the time spent on authority work for current cross-reference production. It is certain that the time spent on authority work will increase after 1981, but this will be the case regardless of the disposition of the card catalog. What may change slightly in conjunction with a change in catalog format is the time spent typing cross-references and history cards. Currently, this involves about four hours weekly of Clerk-Typist B time in the Catalog Maintenance Section, or \$4751.20 in 1978/79. Projected costs (adjusted for an average yearly wage increase of six percent) are:

1. For additional material on the work entailed in link production, see "Report on Links and Authority Work" included in the final report of the Task Force on Technical Processing.

1980/81	\$ 844.15
1981/82	894.80
1982/83	948.49
1983/84	1005.40
1984/85	1065.72
1985/86	1129.66

Additionally, the Slavic Section of Area Collections and the Serials Section type the cross-references and history cards generated by their respective cataloging. The cost of the typing of cross-references by the Slavic Section is minimal and is costed in with the other labor expenses included in the section on Slavic Section Catalog Maintenance. The Serials Section typist (Clerk-Typist C) spends about one and one-half hours a week typing cross-references and history cards, at a cost of \$322.08 for 1978/79. The cost projections are:

1980/81	\$ 361.89
1981/82	383.60
1982/83	406.62
1983/84	431.02
1984/85	456.88
1985/86	484.29

These projected cost for the typing of cross-references may decrease if an automated catalog (COM or on-line) is adopted. If OCLC were to provide for the automatic generation of cross-references, the typing of cross-references could nearly be eliminated. If not, cross-references and history cards would still need to be done, but in a different manner. The information might be entered on-line at the terminal or might be entered onto a coding sheet for manual data entry. This would result in a small saving of time as the information would only be "typed" once, even when multiple catalogs require the reference.

2. Non-OCLC Card Production

Another aspect of catalog creation which is subject to change based on the status and format of the catalog is the production of non-OCLC cards. Currently, the cards which are produced locally include the cataloging for Rare Books, non-Roman alphabet materials, serials in microform¹, and newspapers. Additionally, added-copy cardsets for serials originally cataloged locally are produced locally, but this procedure may be changed by 1981.

Cards in the vernacular script, for instance, Chinese or Japanese, are purchased from the Library of Congress and are duplicated in Printing Services. Added entries and subject tracings are then overtyped by the Catalog Maintenance Section. Rare Books cards are typed here and this pattern card is duplicated; the duplicated cards are then overtyped. The Catalog Maintenance Section spends about fifty hours weekly (twenty Clerk-Typist B and thirty Clerk-Typist C) in the production of these non-OCLC cards. This translates into the following costs:

	Clerk-Tpist B	Clerk-Typist C	Totals
1978/79	\$ 3756.00	\$ 6444.00	\$10200.00

1. Production of microform serials cataloging on OCLC has just been begun.

Future projections are:

	Clerk-Typist B	Clerk-Typist C	Totals
1980/81	\$ 3981.36	\$ 6830.64	\$10812.00
1981/82	4220.24	7240.48	11460.72
1982/83	4473.46	7674.91	12148.37
1983/84	4741.86	8135.40	12877.26
1984/85	5026.38	8623.53	13649.91
1985/86	5327.96	9140.94	14468.90

The Slavic Section of Area Collections and the Serials Section type the pattern cards and overtype the duplicated cards for their respective cataloging. The Slavic Section typing and overtyping costs are included in the section on Slavic Section Catalog Maintenance. The Serials Section typist (Clerk-Typist C) spends about four hours per week on these activities -- a cost of \$858.89 for 1978/79. The projected costs are:

1980/81	\$ 965.05
1981/82	1022.95
1982/83	1084.33
1983/84	1149.39
1984/85	1218.35
1985/86	1291.45

Other costs to examine in the production of non-OCLC cards are the purchase of the "pattern" cards from LC, the cardstock itself, and the duplication charges from Printing Services. For 1978/79 these costs totaled \$7129.08. No estimates have been ventured for future costs in this area.

As more of these materials can be cataloged in the OCLC terminal, these costs will decrease regardless of any change in the format of the public catalog. The Library of Congress has begun to catalog its materials in Cyrillic and in the South Asian scripts in romanized form. However, the cards for the remaining non-Roman alphabet materials will continue to be produced manually until such a time as the Library of Congress romanizes all of its cataloging. Additionally, this library may continue to produce manually the cards for materials cataloged after 1981 for which pre-AACR 2 vernacular LC copy is available. Initially, there will be only a slight decrease in costs for non-Roman catalog card production, but these costs should begin and continue to decline.

If all Rare Book titles could be cataloged on the OCLC system, a considerable reduction in cost would result. At this time, the level of description necessary for cataloging Rare Books and the need to catalog separately different printings of the same edition of a title render the cataloging on OCLC of these materials problematic. The Rare Book Subcommittee of the Task Force on Technical Processing has recommended dual cataloging for Rare Books -- entry of a machine-produced record in the public catalog and entry of a manually-produced record in the Rare Book Department catalog. This would mean that there would be no saving in the cost of producing Rare Book catalog records.

Again, if the serials in microform and the newspapers were cataloged on the OCLC system, the cost of typing and overtyping these cards would be eliminated.

It is possible that serials in microform will be cataloged via OCLC at some future date regardless of changes in the catalog format. If a COMCAT were begun in 1981, these serials would be input via OCLC. To catalog the newspapers on the OCLC system might require changes either in our cataloging practices for newspapers or in our OCLC profile or both. OCLC is currently preparing a newspaper format which should be ready within the next year. Changing the profile would be a one-time cost; changes in the procedures for cataloging newspapers may result in an increased cost. It may be that these costs would offset any savings resulting from the elimination of the manual production of these cards. The Serials Section staff also type the serials holdings cards which file behind the serial catalog card in the OSC. Approximately one hour per day (divided among six staff members) is spent on this typing. Since the data must be recorded somehow, regardless of the format of the catalog, no immediate reduction in cost is foreseen here unless the move to an automated catalog were accompanied by a transition to an automated serials check-in system.

3. Searching in the Public Catalog

One aspect of the creation of the catalog is the use of the catalog itself in the course of compiling cataloging information. There are three categories of such use: 1) searching done in authority work; 2) title-specific searching done with the call number in hand; and 3) title-specific searching done without a known call number.

In the course of authority work, the original and serials catalogers search the public catalog as one step in establishing the correct form of personal and corporate names and in determining the necessary cross-references. Theoretically, an add-on catalog would cause a slight increase in the time needed to do this searching. Authority work, however, generally requires finding only one occurrence of a name, so after locating the name in the add-on catalog, the search would stop. Since the time spent in authority work will increase dramatically as a result of the adoption of AACR 2 regardless of catalog format, the Cataloging Department does not feel that this aspect of the creation of the catalog is significantly cost-sensitive under any of the options.

A great deal of searching of the public catalog is done in added copy, added volume and transfer transactions. In these instances, the call number of the title is known and the search is initiated at the shelflist. A symbol could be devised for the shelflist card which would indicate which catalog contained the record for a given title (or the cataloging date itself, already a standard piece of data on the shelflist card, could serve as such an indicator). This arrangement would eliminate any need to search in two catalogs when the call number is known.

Finally, the original and serials catalogers routinely search the public catalog to determine if the title to be cataloged as a new title is actually an added copy. If an add-on catalog is begun, the time required for this searching would increase. Since the material searched is generally found not to be an added copy, both catalogs would need to be searched more often than not in this case.

4. Checking-in OCLC Card Shipments

A minor aspect of the creation of the card catalog is the checking-in of the OCLC card shipments. This procedure requires matching the shelflist card to the worksheet or printout and inscribing onto the shelflist the cataloger's initials, the date the cataloging was produced on OCLC, and the copy, volume and location information in certain exceptional instances. Cross-reference requests are separated from the catalog record and sent to the Catalog Maintenance Section, as are cards requiring cross-references for uniform titles. If a problem is detected, the entire cardset is "pulled" from the shipment and returned to the cataloger for correction. The remainder of the cards are then banded together by catalog or library and distributed.

About five OCLC shipments are checked in per week. The time per shipment varies according to the person doing the work as well as the size and incidental complexity of the shipment. The average time per shipment seems to be four to six hours. Two shipments per week are checked in by a Clerk D in the Catalog Maintenance Section (at a cost of approximately \$2568.00 for 1978/79). The remaining three shipments per week are checked in by thirteen other members of the Cataloging Department on a rotating basis. The estimated cost of this labor is somewhere over \$3852.00 (1978/79)¹ which yields an estimated total cost for 1978/79 of over \$6420.00. Projected costs are:

	Clerk D	Others	Totals
1980/81	\$2885.40	4328.10	7213.50
1981/82	3058.53	4587.80	7646.33
1982/83	3242.04	4863.06	8105.10
1983/84	3436.56	5154.84	8591.40
1984/85	3642.76	5464.14	9106.90
1985/86	3861.32	5791.98	9653.30

As long as a card shelflist is maintained, there will be no appreciable cost reduction for this checking-in.

5. On-order Information

The inclusion in the catalog of on-order information is extremely valuable to many catalog users, both staff and public. If this information were not included in the catalog, then many users would routinely need to search a separate on-order file in addition to the public catalog to complete a search.

At present one copy of the multiple order form for nearly every title purchased is filed into the public catalog by a member of the Order/Receipt Section of the Acquisitions Department. This filing time costs an estimated \$2253.60 for 1978/79 (12 hours per week of Clerk-Typist B time). Projections are:

1. This cost was derived by multiplying the Clerk D cost for two shipments by 1.5. This is actually an underestimate as the others involved in this work are higher-paid personnel.

1980/81	\$2532.14
1981/82	2684.07
1982/83	2845.12
1983/84	3015.83
1984/85	3196.77
1985/86	3388.58

This filing cost could of course be eliminated if an automated catalog were adopted and an automated acquisitions system were developed in conjunction with the automated catalog. Failing that, the on-order information may be filed into a separate on-order file or the filing time may be transformed into the time needed to enter the on-order data into the automated catalog data base by batch or interactive processing. If a separate on-order file is adopted, filing into the file would require less time, but a procedure for pulling out the on-order slips when the catalog record appears in the public catalog would be required. The result might well be an increase in cost because at present these slips are pulled as part of the revision of the filing in the card catalog.

6. Other Input Into the Public Catalog

In addition to the records for materials owned by Alderman Library and its branches several other sorts of catalog records are filed into the Alderman union catalog. Main entries for titles cataloged by the Law and the Health Sciences Libraries are filed into the public catalog by the Cataloging. The cards are purchased directly from OCLC. If an automated catalog were adopted, the OCLC archival tapes for these two libraries could be used to include complete cataloging for these records. These tapes are currently being purchased by Alderman.

Commercially prepared cardsets are received by Alderman for the material in the Human Relations Area File. These cards are overtyped by a member of the Reference department and are then filed into the public catalog by the Cataloging Department. No information is available at this time regarding the inclusion of these records in an automated catalog.

B. THE COST OF MAINTAINING THE CATALOG

Introduction

A major reason for considering closing the card catalog, either in 1981 or at a later date, and using some type of automated catalog is the growing expense in time and money of keeping the catalogs up to date. The Library of Congress has decided to close their catalog for just this reason. Catalog maintenance involves a number of tasks, all of which are very labor intensive. This report examines the various tasks and attempts to provide cost estimates for each. Also, an attempt is made to predict the effects of each alternative form of the catalog (card, microform, on-line) on the various aspects of maintenance.

For the purposes of this report, catalog maintenance includes the following categories and special areas:

- I. Filing
 - A. Arranging cards
 - B. Filing (includes new cards and refiles)
 - C. Revising
- II. Updating holdings information
 - A. Added Copies
 - B. Added Volumes
- III. Updating location information
 - A. Transfers
 - B. Lost and withdrawn books
- IV. Corrections and Revisions
 - A. Changing headings (main entries, subjects, etc.)
 - B. Correcting typographical errors
 - C. Miscellaneous corrections
- V. Special projects
 - A. Shifting
 - B. Massive headings changes
 - C. Adding and replacing guide cards
- VI. Serials Catalog Maintenance
- VII. Slavic Section Catalog Maintenance
- VIII. Branch Libraries Catalog Maintenance

Filing is done by all cataloging staff; corrections, typing and special projects are handled by Catalog Maintenance; updating holdings and locations information is done by selected staff in the LC/SOLINET

section. One other duty, necessary for most categories, is pulling cards. It is implicitly included in, but not separated out from, those areas where the pulling of cards is necessary.

Recataloging and reclassifying is an area which might be called maintenance. But since it often involves extensive work by professional catalogers, sometimes starting over from scratch, this report considers it merely as another type of cataloging per se, not maintenance. Therefore, recataloging and reclassifying are not included here, although they account for a fair amount of time and money in the Department's budget.

It should also be mentioned that nearly all catalog maintenance is subject to revision by a supervisor. This great amount of supervisory work is generally not reflected in the figures that follow. We have figures for revision of filing but not for much else. Therefore, the reader should keep in mind that there is an additional unknown cost that is a part of catalog maintenance.

CURRENT COSTS

I. Filing

Although exact figures on the amount of filing done by each person in Cataloging and the branch libraries are not kept, it is possible to estimate the weekly time spent per person on this task. In September and October 1978, each member of the Cataloging staff was asked to estimate how much time they spend each week on each of three tasks: arranging cards for filing, filing, and revising someone else's filing. The branch libraries¹ were asked to make the same estimates. Included in the survey were all levels of library staff, from student assistants to librarians.

After these estimates were made and tallied, a table was constructed showing the amount of time to be spent in fiscal 78/79 on arranging, filing, and revising. Table I shows that over 16,000 hours of staff time are involved, and two-thirds of that is in the Cataloging Department. It is interesting to note that the amount of filing both in Cataloging and elsewhere is about equal percentage-wise, while arranging and revising are inversely proportional for cataloging and outside of Cataloging. This is not unexpected, however, since in the branches there is less revising because one person does all three tasks (the filer does not revise his or her own filing).

Next, each person's filing time was multiplied by his or her hourly rate to obtain the cost of that time. The result is Table II, the cost of filing by department and library, which shows that the

¹Periodicals, Rare Books and Manuscripts were also included.

TABLE I

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UNIVERSITY OF VIRGINIA LIBRARY
FILING AND RELATED TASKS^a
TIME SPENT (TOTAL HOURS, 1978/79)

<u>LIBRARY/DEPT</u>	<u>ARRANGING</u>	<u>FILING</u>	<u>REVISING</u>	<u>TOTAL</u>	<u>% OF TOTAL</u>
Cataloging	2,085.6 18.9%	4,692.6 42.6%	4,242.3 38.5%	11,020.5	68.01
Non-Cataloging ^b	1,907.9 36.8%	2,299.0 44.4%	976.4 18.8%	5,183.3	31.99
Bio/Psych	71.1	118.5	47.4	237.0	1.46
Chemistry	47.4	59.3	23.7	130.4	0.80
Engineering	94.8	308.1	118.5	521.4	3.22
Math/Astro	23.7	71.1	0.0	94.8	0.59
Physics	47.4	47.4	0.0	94.8	0.59
Sci/Tech	284.4	450.3	189.6	924.3	5.70
<u>TOTAL</u>	<u>568.8</u> 28.4%	<u>1,054.7</u> 52.7%	<u>379.2</u> 18.9%	<u>2,002.7</u>	<u>12.36</u>
Commerce	23.7	23.7	0.0	47.4	0.29
Education	47.4	47.4	47.4	142.2	0.88
Fine Arts	331.8	426.6	189.6	948.0	5.85
Music	94.8	331.8	142.2	568.8	3.51
<u>TOTAL</u>	<u>497.7</u> 29.2%	<u>829.5</u> 48.6%	<u>379.2</u> 22.2%	<u>1,706.4</u>	<u>10.53</u>
Periodicals	11.9	35.6	4.7	52.2	0.32
Rare Books	355.5	142.2	118.5	616.2	3.80
Manuscripts	474.0	237.0	94.8	805.8	4.97
<u>TOTAL</u>	<u>841.4</u> 57.1%	<u>414.8</u> 28.1%	<u>218.0</u> 14.8%	<u>1,474.2</u>	<u>9.10</u>
GRAND TOTAL	3,993.5 24.6%	6,991.6 43.2%	5,218.7 32.2%	16,203.8	100.00

^aExcluding the serials and Slavic Sections.

^bThe sum of all sections below.

Cataloging Department accounts for nearly three-fourths of the total cost of filing in the Library's catalogs. Further, half the cost of these tasks in the Cataloging Department is for revising, due mainly to the fact that the higher paid staff (i.e., the librarians and library assistants) do most of the revision. The \$57,544.35 represents 10 percent of the Cataloging Department budget for the current fiscal year, excluding SOLINET costs.

The figures in Tables I and II include filing mainly in shelflists and public catalogs. They do not reflect, for the most part, filing in special catalogs such as authority files, accession files, the Official Serials Catalog, etc.

Using an average yearly wage increase of six percent, the following table shows the projected cost of filing and related tasks for the entire library system for the next seven fiscal years, assuming no increase or decrease in the amount of filing, and assuming the catalog remains open. Seven years was chosen because that extends the figures to include the first five calendar years under AACR2.

1978/79	\$79,744.92
1979/80	84,529.62
1980/81	89,601.62
1981/82	94,977.48
1982/83	100,676.12
1983/84	106,716.69
1984/85	113,119.69
1985/86	119,906.87

II. Updating Holdings Information

In Alderman Library, one person in Cataloging handles all added copy and added volume work for monographs. This person spends all of her time (except for 2.5 hours per week for filing) updating and correcting holdings on the shelflist and main entry cards. This position is currently at the Clerk C level, paying \$7,344 to \$10,032 per year. For statistical purposes, the middle of the scale will be used, and it will be assumed that 40 hours per week is spent on this task, even though it is really about 38 hours. Therefore, the present costs per year of maintaining holdings records is \$8,592.

Using a six percent annual increase in cost, the following expenditures are predicted for the next seven years:

1978/79	\$ 8,592.00
1979/80	9,107.52
1980/81	9,653.97
1981/82	10,233.21
1982/83	10,847.20
1983/84	11,498.03
1984/85	12,187.91
1985/86	12,919.19

TABLE II

UNIVERSITY OF VIRGINIA LIBRARY
FILING AND RELATED TASKS
ESTIMATED COSTS (1978/79)

<u>LIBRARY/DEPT</u>	<u>ARRANGING</u>	<u>FILING</u>	<u>REVISING</u>	<u>TOTAL</u>	<u>% OF TOTAL</u>
Cataloging	\$8,230.53 14.3%	\$20,551.73 35.7%	\$28,762.09 50.0%	\$57,544.35	72.16
Non-Cataloging	\$7,853.79 35.4%	\$ 7,854.40 35.4%	\$ 6,492.38 29.2%	\$22,200.57	27.84
Bio-Psych	290.52	357.90	229.42	877.84	1.10
Chemistry	274.92	177.75	137.46	590.13	0.74
Engineering	284.40	924.30	599.61	1,808.31	2.27
Math/Astronomy	131.30	393.89	0.00	525.19	0.66
Physics	203.82	203.82	0.00	407.64	0.51
Sci/Tech	950.84	1,595.01	1,124.33	3,670.18	4.60
<u>TOTAL</u>	<u>\$2,135.80</u> 27.1%	<u>\$3,652.67</u> 46.4%	<u>\$2,090.82</u> 26.5%	<u>\$7,879.29</u>	<u>9.88</u>
Commerce	156.66	156.66	0.00	313.32	0.39
Education	142.20	160.69	262.60	565.49	0.71
Fine Arts	1,040.90	1,302.55	1,679.86	4,023.31	5.05
Music	284.40	1,236.60	1,215.00	2,736.00	3.43
<u>TOTAL</u>	<u>\$1,624.16</u> 21.3%	<u>\$2,856.50</u> 37.4%	<u>\$3,157.46</u> 41.3%	<u>\$7,638.12</u>	<u>9.58</u>
Periodicals	38.40	115.20	15.36	168.96	0.21
Rare Books	1,377.00	426.60	478.74	2,282.34	2.86
Manuscripts	2,678.43	803.43	750.00	4,231.86	5.31
<u>TOTAL</u>	<u>\$4,093.83</u>	<u>\$1,345.23</u>	<u>\$1,244.10</u>	<u>\$6,683.16</u>	<u>8.38</u>
GRAND TOTAL	\$16,084.32 20.2%	\$28,406.13 35.6%	\$35,254.47 44.2%	\$79,744.92	100.00

For the branch libraries, no cost figures are available for this task, although one might guess that the percentage of time is considerably less for the branches. Serials holding information is, of course, handled by the Serials Section.

III. Updating Location Information

The processing of transfers and lost and withdrawn books is no small part of catalog maintenance: approximately 30 hours a week are spent in handling these transactions. As can be seen from the following chart, which shows the number of physical volumes handled, the number of items processed varies greatly from year to year. For example, a large number of transfers may occur during a year when a new branch library is established, but few may occur in other years. The same goes for withdrawals: when the Cabell Hall Library was disbanded two years ago, a large number of books was found to be missing and had to be withdrawn.

	<u>LOST AND WITHDRAWALS</u>	<u>TRANSFERS</u>
1973/74	4,295	3,245
1974/75	19,326	3,094
1975/76	21,155	4,545
1976/77	6,735	12,760
1977/78	3,995	14,738
Total	55,506	+ 38,382 = <u>93,888</u> transactions (Volumes)

Since transfers often involve recataloging and ordering new card sets, more than one person occasionally gets involved in the process. In the case of special projects, for example the Music Library transfers in 1976-78, other departments sometimes lend staff to help with the work. Unfortunately, it is difficult to isolate this extra help in terms of time and money. For the purpose of this report, then, we will consider only the Clerk C position in determining the cost of handling transfers and lost books.

The cost of 30 hours per week of Clerk C time for 1978/79 is \$6444.00 (\$8,592 x 75%). Over the next seven years, using again a 6 percent annual increase, the costs will be

1978/79	\$ 6,444.00
1979/80	6,830.64
1980/81	7,240.48
1981/82	7,674.91
1982/83	8,135.40
1983/84	8,623.53
1984/85	9,140.94
1985/86	9,689.40

IV. Corrections and Revisions

Changing headings and correcting typographical errors and other mistakes are functions of the Catalog Maintenance Section. These tasks involve pulling card sets, erasing and re-typing, or sometimes ordering replacement cards from OCLC. Besides the routine corrections, this group also becomes involved in massive heading change projects from time to time. Frequently this entails changing long runs of subject headings which have been revised by the Library of Congress.

Although individual statistics on the number of corrections are not kept, an estimate of the amount of time spent can be obtained. Based on records kept by the Section Head for two weeks in March 1979, it was determined that approximately 36 hours per week (20 Clerk-Typist B and 16 Clerk-Typist C) are spent processing corrections.

The cost of a full-time Clerk-Typist B in 1978/79 is \$7,512.00. Using this figure and those calculated earlier for the Clerk C level, we can obtain the cost of 20 hours/week of Clerk-Typist B work and 16 hours/week of Clerk-Typist C work:

	<u>Clerk-Typist B</u>	<u>Clerk-Typist C</u>	<u>Total</u>
1978/79	\$3,756.00	\$3,436.80	\$7,192.80
1979/80	3,981.36	3,643.01	7,624.37
1980/81	4,220.24	3,861.59	8,081.83
1981/82	4,473.46	4,093.28	8,566.74
1982/83	4,741.86	4,338.88	9,080.74
1983/84	5,026.38	4,599.21	9,625.59
1984/85	5,327.96	4,875.17	10,203.13
1985/86	5,647.64	5,167.68	10,815.32

It should be kept in mind, however, that these costs are only a portion of the true costs of handling corrections. For example, a fairly large amount of time is spent by professional catalogers in clearing up especially complex problems related to corrections. Further, an undetermined amount of student funds is being spent on an on-going project to clear up the ever-present backlog of errors. The amount of money attributed to both student and librarian involvement, since it is sporadic, is simply unknown. All that can be said is that the figures presented above are too low.

V. Special Projects

The Catalog Maintenance Section also is involved in special projects, some on-going, others infrequent. Included in the former category are massive subject-heading revisions which are necessary because the Library of Congress continually changes subject headings on its cards. In 1978/79 about 7 or 8 hours per week were spent on these

endeavors. Using the Clerk-Typist C rate because most of the work is done at that level, we have a cost of \$1,718.40 for 1978/79. From time to time other members of the section get involved in this extraordinary work, but the amount of time cannot be calculated.

A necessary, but infrequent project is the shifting of catalogs. The author/title catalog in Alderman needs rearranging most often because it is the most full of all the Alderman catalogs. The most recent overall shift of this catalog took place in the fall and winter of 1978/79. Tasks included measuring the cards in each drawer, determining how many cards should be in each drawer after the shift, assigning and typing labels, and moving the cards. The following amount of time was involved:

	<u>Librarian</u>	<u>Clerk-Typist C</u>	<u>Clerk-Typist B</u>
Measuring cards (I)	-	15.0	15.0
Measuring cards (II)	77.5	128.5	-
Typing Labels	8.0*	96.0	-
Shifting Cards	63.0	119.0	1.0
Total	148.5 hrs.	358.5 hrs.	16.0 hrs.

(I) Measuring the catalog for total inches

(II) Measuring each drawer and determining division points

* Proofreading

The total of 523 hours was spread over a five-month period beginning in October 1978. The cost of this shift was \$3,050.60, based on the hourly rate of the librarian and on an average Clerk-Typist B and C rate. The cost of future shifts will be somewhat higher due to an annual increase in wages, and because as the catalog grows it will take longer to measure and shift. Finally, it should be remembered that the time spent on a catalog shift project takes away from time spent on routine work.

VI. Serials Catalog Maintenance

The maintenance of the Official Serials Catalog (OSC) in Alderman constitutes a sizeable amount of effort, and cannot be overlooked in an analysis of catalog upkeep. For instance, the maintenance of the OSC includes some of the following tasks:

1. retyping of holdings cards
2. adding holdings
3. correcting holdings
4. pulling cover and/or holdings cards (and replacing them with temporary slips)
5. filing cards
6. revising or correcting cards
7. sorting cards for filing

Although there are no time estimates per person for each task, we do know that about 26 hours each day are spent on catalog maintenance in the Serials Section. This represents 30 percent of all time on a daily basis. For 1978/79, \$103,464 was budgeted for the salaries of the 11¹ persons in the section. Thirty percent of this is \$31,039.20, or the approximate cost of serials maintenance. Again assuming an annual increase of 6 percent for wages, the cost over the next seven years will approximately be

1978/79	\$ 31,039.70
1979/80	32,902.08
1980/81	34,876.21
1981/82	36,968.78
1982/83	39,186.91
1983/84	41,538.12
1984/85	44,030.41
1985/86	46,672.23

This assumes, of course, that each person spends an equal amount of time involved in maintenance. In actuality, the Clerk B's and C's do most of the maintenance, so the cost presented above should be less. How much less, is not known, of course, and we are forced to use the figures derived for the section as a whole. All we can say is, the above figures represent a maximum.

VII. Slavic Section Catalog Maintenance

A little known but important part of catalog maintenance is carried on by the Slavic Section of Area Collections. Slavic does much of their own filing and revising, and other maintenance such as overtyping, adding copies and volumes, corrections, sorting, and more. A small amount of catalog creation work, such as making cross-references and typing pattern cards, impossible to isolate, is included. Approximately 37 hours per week is spent on these tasks. The cost of this work, based on the hourly rates of those involved, for 1978/79 is \$8,788.43. We can project future costs by adding six percent each year:

1978/79	\$ 8,788.43
1979/80	9,315.74
1980/81	9,874.68
1981/82	10,467.16
1982/83	11,095.19
1983/84	11,760.90
1984/85	12,466.55
1985/86	13,214.55

¹There were 12 persons originally. One has since been transferred to Marking.

The effects of increased romanization and input into the OCLC system either in romanized form or vernacular script in the future cannot be determined at this point. It is certain, however, to affect catalog maintenance and costs in the Slavic Section.

VIII. Branch Libraries

In Section II it was mentioned that figures for updating holdings information are not available for the branch libraries. This is also true for the other catalog maintenance tasks presented in this report. Although each separate library does not represent a large part of catalog maintenance overall, the branch libraries as a group do account for a substantial portion of the work done in this area.

How much time is spent on maintenance in the branches? We have fairly accurate figures for filing cards (see Section I), but little else at the moment. Catalog upkeep in the branches includes many, but not all, of the tasks performed by Alderman Cataloging: filing, updating holdings and location information, miscellaneous typing, special projects. Also, there are many special catalogs in the branches, for example the slide catalog in Fine Arts, which require additional maintenance of a different nature.

Another point to be made is that Alderman Catalog Maintenance makes corrections for all department libraries, with the exception of Sci/Tech, Education, Physics, and possibly one or two others. In general, if an error is discovered in the Alderman Cataloging Department, Alderman corrects the cards. If Education or Sci/Tech find mistakes, they often correct them and notify Alderman to change its records. In general, departmental correcting of catalog cards is limited to pulling cards and sending them to Alderman for revision.

Some of the smaller branches estimate that catalog maintenance requires as little as one hour a week, while others like Sci/Tech and Fine Arts spend many hours per day in these activities. In the absence of exact costs, it might seem reasonable to assume that if the branches account for 27.8% of the filing costs, they should similarly account for about 25% of the catalog maintenance costs system-wide. In other words, the branches' maintenance cost is about one-third of the Alderman costs.

This assumption does not seem unreasonable, when one considers that the branch library catalogs are smaller (some much smaller) than the files in Alderman. The branch libraries together account for about 25 percent of all cards in the system, or slightly less than one-third the size of Alderman's files. Therefore, in determining the cost of maintaining the branch catalogs, we will use one-third the cost of maintaining Alderman's catalogs, keeping in mind that it is only an estimate. The real figure could be higher or lower.

Summary of Costs

Based on the costs obtained in the previous sections, we can estimate the current cost of catalog maintenance, and project seven years into the future. The projections assume the continuing of the present catalog under conditions similar to the status quo, that is, keeping the catalog open. Naturally, that option and the add-on alternatives will affect catalog maintenance costs. The second part of this report addresses this latter question.

Alderman Maintenance¹ (1978/79)

Filing	\$ 57,544.35
Holdings	8,592.00
Locations	6,444.00
Corrections	7,192.80
Serials	31,039.00
Slavic	8,788.43
	<u>\$119,600.58</u>

Branches Maintenance (1978/79)

33% of Alderman = \$39,866.86

Total Costs (1978/79) \$159,467.44

Seven-Year Projections

1978/79	\$ 159,467.44
1979/80	169,035.49
1980/81	179,177.62
1981/82	189,928.27
1982/83	201,323.97
1983/84	213,403.41
1984/85	226,207.61
1985/86	239,780.07
Total (81-85) ²	<u>\$1,040,342.11³</u>

¹Excluding shifting and other special projects.

²Calendar years.

³Real total costs for the period 1981-1985 can only be expressed in terms of an indexed dollar, such as the 1979 dollar used in Part I of this report. Since the relevant labor costs seem to be dependent almost entirely upon cost-of-living increases granted to state-classified employees, an estimate of the total real costs for 1981-85 in each category of maintenance can be obtained by multiplying the 1978-79 cost by five. Such figures can then be compared with other figures estimated in 1979 dollars. For example, the total cost in real dollars (1979 base year) of catalog maintenance for 1981-85 is \$159,467.44 times 5, or \$797,337.20.

It should be emphasized that these costs should be considered with caution. First, as mentioned before, these figures are estimates, often based on each person involved trying to guess how much time is taken for a particular task. Second, and more important, closing the catalog does not necessarily mean that a great deal of money now spent on maintenance will be saved outright. It would mean a savings of time, time which perhaps could be put to better use. This will be discussed in more detail in the following section.

EFFECTS OF DAY 1 OPTIONS

After January 1, 1981, when AACR2 goes into effect, the form of our catalogs could change from card format to COM or online access. The card format could remain, of course, in one of two forms: an open (or continued) catalog or an add-on catalog.

Because the cost of maintaining our catalogs is so high, it is of interest to try to predict the effects of alternative forms of the card catalog on maintenance costs. If it can be shown that such costs can be substantially reduced by a change, then a catalog in other than card format may be desirable. This section re-examines the maintenance tasks outlined earlier in the report, and attempts to anticipate the effects of different forms of the catalog on each. Of course, it is impossible to predict all the consequences of a change in catalog format, but it is hoped that this exercise will be a good first step toward understanding this important question.

Filing

The single most time-consuming part of catalog maintenance is the filing of cards. Filing, along with arranging cards and revising, accounts for 50 percent of all maintenance costs. It is obvious, then, that eliminating filing would provide a potential large savings in time and money. The two automated forms of the catalog, Computer Output Microform (COM) and on-line computer access, require no filing, arranging, or revising, simply because no cards are involved.

If an automated catalog were instituted, nearly all the money now spent on filing could be saved. In Alderman and its branches, however, some filing would continue. It is generally agreed that a shelflist would continue to be maintained in card format, at least until all the Library's holdings are represented in an on-line catalog. Materials in non-Roman scripts would likely continue to be filed in the old catalog, or in some separate special file. Selected branch libraries or departments in Alderman (such as Manuscripts) could conceivably continue filing as well, at least for a time. Nevertheless, a substantial amount of time could be saved by closing the present card catalogs and starting an add-on COM or on-line file.

But would the elimination of filing mean an actual savings of money? For the cards received from SOLINET, it would mean a savings of about \$15,000 per year. If manually-produced cards for Rare Books and Area Collections could be eliminated, another \$7,000 or so would be saved if, of course, these latter materials could be processed through OCLC. But for certain non-Roman materials, it is presently not possible.

But as far as eliminating the labor cost of filing, the \$80,000 per year, there would be no savings, at least for several years. People would stop filing, but they would still be employed in the Cataloging Department, doing other things instead of filing. It's not as if positions would be eliminated, at least in the immediate future. After all, no person does only filing; each staff member does a certain number of hours each week, along with other tasks. What then, are the benefits of not filing cards, besides an actual savings for catalog cards and a theoretical savings of wages?

First, filing errors would be eliminated. When the computer is filing, there are no mistakes, unless, of course, the information it has is incorrect. If the main entry is misspelled on an OCLC record, the computer won't know that. It will just file it in the wrong place. This should be a very minor problem, however.

The second advantage of eliminating 16,000 hours of filing annually, is that it will free Cataloging staff to do other things, to increase service in other areas. For example, we know that authority work is likely to increase substantially under AACR2. The time saved on filing on the professional and library assistant level could partially be used to create cross-references and links, or to catalog more books more quickly.

The other Day 1 option, an add-on card catalog, should also be mentioned here. Filing would certainly be easier in an add-on card catalog, at least for two or three years, while the catalog is "small." But an add-on card catalog, of course, would not eliminate filing costs, only reduce them.

Updates and Corrections

Another important part of maintenance, keeping locations and holdings information up-to-date, and making corrections, would not be eliminated with an automated catalog. These tasks would continue, although the methods would change somewhat. The card shelflist, as long as it existed, would be updated using present methods. But adding holdings information or changing a location due to a transfer would require a change in procedure. Instead of pulling cards, erasing, adding information, etc., one would fill out a coding form for data entry (COM) or sit down at a terminal and make the necessary changes on-line.¹ Both would be easier

¹Any time a new copy is added to an existing old record, however, cards may have to be pulled and some type of recataloging may have to be done.

that present methods which require pulling cards and making several trips to the catalog.

The on-line technique is the most desirable because it is the easiest to handle and the fastest way to update the file. There are two ways that this can be accomplished. First, if OCLC begins offering local holdings maintenance on-line, then it would be fairly simple to update most of the records. A local program using non-OCLC terminals could also be used in a similar manner to keep a local on-line catalog database up-to-date. If OCLC fails to provide on-line holdings maintenance, and we do not have a way of locally changing our database, then it would be very awkward to update through OCLC. As it is now, the cataloger must call up the OCLC record and frequently reconstruct it according to our local specifications before even updating holdings information.

In summary, we can say that handling corrections and updates would continue under an automated system and would require less time to perform. What this means in cost and time savings is impossible to know at this time.

Special Projects

A COM or on-line catalog would eliminate the need to shift cards, of course, and that is a substantial savings, but other special projects, such as changing subject headings, would go on. Fortunately, changing large numbers of headings would be made easier by the computer. Through the use of a batch or on-line program it would be very simple to quickly and correctly alter large numbers of headings for those records in machine-readable form. The savings of time and energy in this area could be significant. Further, the current backlog of these changes, which is quite large, could be eliminated fairly easily.

An add-on card catalog would eliminate the need to shift for some time, but would not erase the need indefinitely. Subject heading changes in an add-on catalog would also be fairly simple, at least for several years, as long as there are relatively few cards to be changed.

Finally, if the card catalog is closed and an add-on automated catalog begun, there may be a new kind of maintenance special project--the weeding out from the old catalog of those records which are duplicated in the new catalog. If an add-on COM catalog including all of the catalog records on the library's archival tape is begun in 1981, it may be desirable to pull out from the old catalog the cards for those records.

Duplicate records, card and machine-readable, would mean duplicate records to maintain. One could not be updated, for example, without revising the other. Also, duplicate records could be confusing to patrons who are conducting comprehensive author and subject searches using both catalogs.

Alternately, if the card catalog is kept open now, and the add-on

on-line catalog including all machine cataloging is begun at some future date, a much greater overlap of duplicate records may warrant weeding out from the card catalog. Such a project would be extremely time-consuming. It may be possible to devise other methods, but at this time the Cataloging Department feels that a very thorough procedure would be necessary were such a project undertaken. This would entail identifying all machine-cataloging records and then, starting with the shelflist card, pulling each of the cards in the cardset. No actual cost has been calculated for such a project.

This massive weeding project may prove too costly, unworkable, and even undesirable. In this case, a new maintenance procedure may still need to be devised. As changes and corrections are made to the records in the add-on catalog, the duplicate card records may also need to be changed. Alternately, the decision could be made to discard the old catalog cardsets for those titles at the time the record in the new catalog is corrected. No estimate has been made on the volume or cost of this activity.

Serials Catalog Maintenance

The maintenance of the Official Serial Catalog involves most of the same tasks as the maintenance of the author-title catalog. The effects of automated catalogs on these tasks would be roughly the same as described above. However, the maintenance of the OSC also involves the updating (and correcting, retyping, etc.) of the holdings cards. These cards are currently produced manually and there are no foreseeable plans to produce these cards via OCLC. If an automated catalog (COM or on-line) were adopted, a local program would need to be written in order to record the holdings information with the catalog records. This program should be compatible with other computer systems for networking and union listing purposes. The cost of developing such a program has not been estimated.

Once the programs were developed, it would be less expensive to update this information manually on the terminal (or on coded data sheets) than to update it manually on the holdings cards. However, until the department also adopts an automated serials check-in system, the cost of recording this holdings information will not be greatly reduced. If a local holdings program cannot be developed by 1981, it may be necessary to continue to record the holdings data manually in a card format, at least as an interim measure. Of course, this would mean no reduction at all in cost. For a more detailed discussion, consult the Serials Sub-committee Report of the Task Force on Technical Processing.

Summary

While no actual monetary savings, other than for catalog cards, would accrue immediately in the area of catalog maintenance from the implementation of an automated catalog, there are still many advantages of such a move. Some maintenance, such as filing, would be eliminated; other tasks would be made easier, faster, and less error-prone. These points should not be underestimated.

It is conceivable that positions could be saved eventually because automated catalogs cut down on the need for labor-intensive maintenance. Only time would tell. Perhaps all time saved by automation would be used in Cataloging or elsewhere in the Library. At the very least, automation should slow the need to add new positions in the future and to help present cataloging staff accomplish more, both in numbers of items processed and, more importantly, in making the catalog as accurate, consistent, and useful a tool as possible for all who employ it, both library users and staff.

Finally, it should be remembered that the growth of the catalog is another important reason for examining the cost of maintenance. As the catalog grows larger and larger, it becomes more and more difficult to maintain. For an in-depth look at the growth of our catalogs, please consult the appendix entitled "A Report on the Growth of the Card Catalog."

C. STAFF USE OF THE CATALOG

INTRODUCTION

The predicted effects on catalog use within each department of the library under each of the options are extremely difficult to quantify. This is due to the lack of available statistics and, even more so, to the nature of the use. Although some departments are able to arrange most of their catalog usage into sizeable blocks of relatively uninterrupted searching, many departments cannot. Scattered searches of varying complexity do not lend themselves to measurement. For many departments, the volume of catalog use varies widely throughout the year. Finally, the amount of time required to search the public catalog is at least partially determined by the skill and experience of the searcher.

In this examination of catalog use by library staff, four options were considered - continued card catalog, add-on card catalog, add-on COM catalog, and add-on on-line catalog. Although the add-on on-line catalog will not be feasible by 1981, it has been included as an option for two reasons. First, the projected effects on catalog use with an add-on on-line catalog are significantly different from those with either an add-on COM or card catalog. Second, nearly every staff member interviewed based the projection of effects on catalog use with the add-on COM or card options on the assumption that these options would be interim catalogs. The sentiment is very strong that any add-on catalog must be considered an interim measure until the eventual goal of an on-line catalog containing all of the library's catalog records can be achieved.

Although very little quantification is possible, a ranking of the predicted effects on searching time under each option is possible. Since the effects seem likely to be similar for each department's searching time, a general pattern is established in this introduction. In the following examination of each department, only those ways in which the effects on its use seem likely to differ from this pattern will be discussed. Catalog use within the Cataloging Department is discussed in the above section on "Catalog Creation and Maintenance."

It is generally felt that an add-on COM catalog, for reasons below, is anticipated to cause the greatest increase in search time for departmental catalog use. Of course, all of the add-on catalog options will increase search time since a large proportion of searches may need to be done in both catalogs. Although some departments felt that their search time would be nearly doubled with 2 catalogs to search, the actual increase in search time would never be 100% for known item searches. Even if nothing more than chance were at work, the first catalog searched would frequently be the right choice. Searchers will have more than just chance at work in choosing which catalog to search. Closing by cataloging date is a less firm guide than publication date, but will be a clear guide for material published after 1981. However, any department which searches a high percentage of non-current* material and any department lacking accurate date of publication information will need to

*Each department, and sometimes each division within a department, defines "current" slightly differently. For our purposes, it will describe material published within the last one to five years.

conduct quite a lot of their searches in two catalogs. Even when a reliable date of publication is available, the physical arrangement of some searching lists (e.g., dealer' catalogs and other selection tools, reserve book lists, etc.) is such that a complete search of all the titles on the list in one catalog, followed by a search in the second catalog of all of the titles not found in the first, may be a more efficient search strategy than dividing titles by imprint date and searching first according to the date. Two kinds of searching which would double the number of files to search with an add-on catalog are subject searches and complete-author searches (i.e., searching for all of the works by a given author owned by the library). In these instances, both catalogs will need to be searched. An additional factor which affects all kinds of searching, but would be a greater problem with an add-on COM or add-on card catalog, is that pre-order information received from recommenders and publishers catalogs is very frequently unreliable. The result is that the searching required to verify holdings and entry information is not straightforward. The multiplicity of languages, places of publication, and dates of publication further complicate all pre-order searching and collection maintenance activities.

For staff members who are very familiar with cataloging rules, there will be a time-saving benefit of a two-catalog arrangement. In searching each catalog, the heading looked under can be formulated under the set of rules appropriate to that catalog (keeping in mind that the closed catalog would represent four sets of rules). In this way, the correct heading would be more likely to be found on the initial search, though not necessarily the exact title sought. With a continued catalog, the user would seldom know which set of rules to use in constructing the heading to search first. (Theoretically, a sophisticated user would know to construct headings for searching according to AACR 2 for material published after 1981.)

The add-on COMCAT option further increases search time for the following reasons. A COMCAT may mean at least a third file to be searched - the COM supplement to the COMCAT. If on-order/in-process information is not included in the COMCAT, some departmental use will require a search in a fourth file - the on-order/in-process file (whatever its configuration). This increase in search time due to the number of files being examined may be offset to some degree by the proximity of the COMCAT. Each department can have its own reader and COMCAT and thus reduce the number of trips daily to the public catalog in Memorial Hall. Most departments felt, however, that this factor would not offset the increase enough to rank the COMCAT in any position other than that of the option which will cause the greatest increase in search time. Furthermore, those departments doing the largest volume of catalog searching are generally in the best position to arrange their searching in blocks and thus already make relatively few trips to Memorial Hall. The Reference Department is the most obvious exception to this. If the COMCAT were to include only material cataloged after 1981, then the COMCAT would initially be so small that most searches would also need to be sought in the closed card catalog. If however, the COMCAT were to include all the material on the library's OCLC archival tapes (with headings revised to AACR2 form), the number of searches found in the initial search of the COMCAT would be very much higher. Some departments displayed apprehension that the time to select the correct fiche

and insert it into the reader would further increase search time. This should not be a significant problem as familiarity with and skill in the use of the fiche will be rapidly gained.

The option which is perceived to cause the second greatest increase in search time is the add-on card catalog. Again, a high proportion of searches will require execution in both catalogs. All searching would need to be done at the public catalog in Memorial Hall. Access to the add-on card catalog may be a problem. Crowding and queuing at the drawers could result from the smallness of the catalog. However, a smaller file could be searched more quickly; searching would frequently stop with the first filing element. (If there is only one catalog entry under "Twain, Mark" it can be more rapidly identified as the sought title than if there were several entries, and the searcher had also to look under the second filing element - in this case, title.) It may be that access difficulties and more rapid filing abilities will balance each other, resulting in neither a net gain or loss in search time. On-order/in-process data would be filed in the add-on card catalog, so the number of files to search would remain at two.

The third greatest increase in search time would result under the option of an add-on on-line catalog. Two files will still need to be checked in a high proportion of departmental use. Terminals may not be initially located within each department, but the eventual addition of terminals within departments will reduce the number of trips to the public catalog in Memorial Hall. Even without this proximity, the on-line catalog could be searched much more rapidly and effectively than either a COM or card catalog (assuming that response time does not downgrade). Combinations in search strategies could reduce the number of searches required to locate a sought title, as could an on-line authority control system.

A continued card catalog at this time would cause the least increase in search time for departmental catalog use. Only in those instances in which a heading is established under both a pre-AACRII and an AACRII form will two files need to be searched. It has been estimated that 15% of the personal and corporate name entries in the public catalog would have a different AACRII form. However, not every heading in the 15% is likely to recur - i.e., to be a main or added entry for a title cataloged after 1981. The number of recurring headings which will be formulated differently under AACRII has been estimated at 10%. These percentages are based only on personal and corporate name headings, so one cannot say that 10% of all searches will involve two files. Since searches also entail title searches, the maximum number of searches involving two files would be under 10%. It has been estimated that 40% of the entries in the author-title catalog are title entries. One might assume from this that only 6% of searching would entail searching in two files with a continued catalog. However, for staff catalog use this estimate may be too low as most staff searching initiates with an author search and falls to a title search only after a failure to locate the sought record with an author search. One option which is under consideration is the interfiling of both forms of the heading in one place (probably the filing position of the new form) for all personal names which change. This could reduce the incidence of searching two files in a continued catalog to as low as 2% of all searching.

There is a long-term possible increase in search time resulting from the continued catalog option. If an on-line catalog is implemented at some future date, it seems probable that all of the cataloging done in machine-readable form will be included in that on-line catalog. This would result in a sizeable overlap of entries in both the old card catalog and the new on-line catalog. It may not be practical or economically possible to remove this duplication from the card catalog, in which case users will be searching through the same group of records in two different places in order to discover that an item is or is not held. This may not be a problem for a large proportion of departmental use if search strategies in an on-line catalog are specific enough to identify uniquely the title sought. However, the overlap may not be a problem at all, as it could serve to increase the chance of finding the sought title in either catalog provided that the call number has not changed.

The presence or absence of links under each of the four options will have an additional effect on searching time. It is assumed that links will be present in the continued catalog option. It may be that certain links (especially a link combined with a history card) will require lengthy perusal for their use. The encounter of such a link in searching should be relatively infrequent. Under the three add-on alternatives, links can be considered optional. Again, the use of complex links may require slow and studied perusal. Search time may be slowed down less by a two-step cross-reference than by a complex link. Most links, however, would be straightforward references between two headings. The avoidance of two-step cross-references (to be relied on in the absence of links) would be time-saving in the majority of searches. Any decision not to include links in an add-on catalog would be based primarily on the assumption that the internal cross-reference structure of each catalog would be sufficient to guide the user to the correct entry in each catalog. Unless specific measures are taken to assure that each catalog contains a reference from the form of heading used in the other catalog, this assumption will fall short of full linkage. Without full linkage (in the form of links or cross-references) the library staff will need to spend some additional time determining the correct entry in each catalog or deciding whether the search can stop without seeking additional possible entry forms. Doubtless, materials will not be found which actually are owned by the library. Especially with regard to pre-order searching, this could be very costly, as duplicate purchasing would result.

The absence of certain links or cross-references may be less deleterious in a COMCAT. In searching for the sought heading, the user may happen on the correct (but unreferenced) form of heading. This is less likely to occur in a card catalog. An on-line catalog offers the possibility of automated authority control which would assure the location of all material in the new catalog, but may still result in unsuccessful searches in the old catalog.

The absence of links may be offset by a vigorous training program for all library staff in the ways headings will be formulated under AACRII. Even if links are present, such a program will be warranted.

The sections on catalog use by branch libraries require a separate introduction. The question of catalog use in the branches is complex; two catalogs are involved - the Alderman public catalog and the catalog of the branch. For the most part, it is the use of the Alderman catalog by

the branch staff that is examined in the following departmental breakdown. Most branches, however, will be more affected by the configuration chosen for their own catalog.

The branch library staff members use their catalog in ways that parallel the use in Alderman. Pre-order searches start there. Catalog and collection maintenance involve heavy catalog usage. Inventory is done periodically. Patron assistance is an especially high branch catalog use.

Several of the branch libraries have expressed a strong preference for continuing their card catalogs even if the Alderman catalog is closed. This could cause a serious problem in branch catalog use if links are not supplied by the Cataloging Department for the branches. Most of the branches do not have staff who are adequately trained in the cataloging rules to create links for themselves. In the absence of these links, the branches' use of their catalogs for all functions would suffer, although the percentage of headings affected by a change within each branch library catalog may be so small that the resulting problems will not be grave. Branch library staff will need to be trained not only in the use of their own catalogs, but also in the use of the Alderman catalog (and, for the science branch libraries, in the use of the Science Technology Center catalog). Even branch library staff members who do not use these catalogs should be able to direct their patrons to these catalogs and to give instruction in their use.

ACQUISITIONS DEPARTMENT

Use of the public catalog by the separate sections of this department varies in intensity and result. For this reason, it is necessary to consider each section separately.

Bibliography Section

Charged with development and maintenance of the collection in almost all subject areas and in specific geographical areas, this section's primary use of the public catalog falls into two categories. Greatest use is for pre-order searching for holdings information and verification of entries. The second use of the public catalog and other catalogs is for collection maintenance activities, i.e., identification of collection gaps and missing books, and the identification and rectifying of cataloging problems. The catalog is also used for reference purposes, mainly by professional staff.

The staffing of this section consists of five full-time professionals with their 10 full-time and one half-time library assistants, one clerical person and 70 hours per week of student assistance at the graduate level. The professionals spend from 1 to 5% of their time using the public catalog while library assistants and students spend from 15 to 35% using it depending upon their level of expertise and the Bibliographer for whom they are working. In addition, there is one half-time professional who spends 50% of her half time supervising bibliographic activities for English language African material and although she does not herself use the public catalog, she has a student at the graduate level who spends approximately five hours per week using the public catalog for preorder searching activities.

It is estimated that the workload for these particular activities will increase from 60 to 80% in the first year if two catalogs exist in any format. This increased workload would, however, diminish significantly in future years as search strategies are developed to predetermine which of the two catalogs should be searched first. Unfortunately, the amount of retrospective purchasing and consequent cataloging being done will make it impossible to predict for 30 to 40% of the material searched whether it might be in one catalog or the other by publication date alone. For this reason, the section's preferred alternative among those under discussion is that of keeping the present catalog open with links with the firm intention of going on-line for both cataloging and acquisitions within five years of day one. Second choice among the alternatives is an add-on on-line catalog which includes on-order/in-process information. Alternatives ranked third and fourth are an add-on card catalog and an add-on COM catalog. In any case, it is essential that any catalog alternative contain on-order/in-process information updated daily.

Order/Receipt Section

For purposes directly connected to ordering and receiving, this section uses the public catalog primarily as an in-process file, filing into it slips for every title ordered and most titles received on approval. During the process of filing these slips, duplicates are discovered and either the orders are voided or the approval books are returned to the

vendor. The only other use of the catalog by this section is the reverse of the filing, i.e., the pulling of filed slips for cancelled titles. On-order slips are filed by one clerical person who spends from one to three hours per day at the task, depending on the number of orders typed. Received slips for approval order titles are also filed by clerical staff and this filing takes approximately 1/2 hour per week.

The creation of any new catalog or even the continuation of the present catalog without on-order or approval information included would theoretically reduce this workload, but would necessitate the creation of some kind of additional on-order file for the use of all staff doing pre-order searching.

Also working in the Order/Receipt section is one Library Assistant who is responsible for pre-order searching of all English-language departmental library requests. Because science departmental requests are handled by Sci/Tech staff; this LA's work is primarily with material for Fine Arts, Education, Music and Commerce. In addition, she handles all antiquarian/O.P. catalog material regardless of language. She spends approximately 50% of her time working with this material at the public catalog. She estimates a workload increase for these activities of 10 to 20% for both an add-on card catalog and an add-on COM catalog if both are equally accessible and she does not have to stand in line to use them. With an add-on on-line catalog, she estimates a workload increase of up to 10% if a terminal is available to her in Order/Receipt. Because such a large proportion of her time must be spent at the public catalog, she has relatively little other work that is not p.c. related to fill her time if this catalog is not immediately accessible to her. Therefore, if the new catalog format is not as accessible as the present catalog, more time will be used because of the waiting (queuing) time even though there will be no actual increase in the workload. The alternative of keeping the present catalog open with links would cause some increase, but not a measurable one. It is, again, essential that on-order/in-process information be included in whatever format is selected and put into use.

Gifts and Exchange Section

This section's use of the public catalog falls into two distinct categories. First, the catalog is searched to determine holdings information and correct entry of from 2,000 to 3,000 titles per year which Bibliographers have previously decided are acceptable material. These few titles are weeded from the 60,000 to 90,000 gift items received each year. The searching is done by student assistants and takes approximately 20 hours per week.

Because the hit rate for searching is only 20 to 30%, the existence of two catalogs could conceivably increase the workload by 70 to 80% even if the new catalog format were available within G & E itself. Also, the greatest part of the items searched is non-current, thus imprint dates may not be a firm guide to which of the two catalogs needed to be searched first.

G & E also files into the public catalog an in-process slip for each title on which a "keep" decision is made. For this reason, provisions must be made to cover this part of the on-order/in-process aspect of any new catalog format.

Out-of-Print Section

This section uses the public catalog primarily for holdings information but also uses it for edition comparisons, etc. The section is staffed by one half-time professional (who also serves as English-language African Bibliographer), one half-time Library Assistant and 20 hours of student assistance at the graduate level. Both the Library Assistant and the student spend approximately 25% of their time at the public catalog.

It is estimated that the existence of two separate catalogs, regardless of format or location, will increase the above workload by a minimum of 75% with little diminution in future years since the retrospective nature of the material searched will not change. Perhaps after 10 or 15 years, some reduction may occur.

The preferences of the staff in this section are as follows in order of preference: 1) a continued integrated card catalog with links as a preface to going on-line within five years; 2) an on-line add-on catalog; 3) an add-on card catalog; and 4) a COM catalog. In all instances, full access to on-order/in-process information is assumed.

AREA COLLECTIONS DEPARTMENT

Because of the particular areas of the world and languages covered by this department and because the staff fulfills all of the library functions for this material, including acquisitions, cataloging and reference, reactions to various alternatives to the present card catalog are necessarily complex. In this section, it is our purpose to cover only the non-cataloging aspects of catalog usage.

East Asia Section

The non-cataloging uses of the public catalog in this section fall into three basic categories:

- 1) holdings and entry verification;
- 2) collection maintenance; and,
- 3) reference work.

The one full time Library Assistant in this section spends approximately 25% of her time at the public catalog in the pursuit of these activities. The work is necessarily complicated by the variant methods of romanization used within and without the countries in question as well as the scarcity of a well organized book trade in these areas of the world.

Because the searching is already complicated by the above factors and because of the scarcity of any but title or personal author entries, it is estimated that the workload increase in the non-cataloging use areas will be approximately 10% regardless of the form the catalog takes after day one. Nevertheless, staff in this section have decided preferences in the matter of future format and have stated that on-order/in-process information must be included in whatever format is used. Their

order of preference is as follows: 1st, continued integrated catalog with links; 2nd, an add-on card catalog; 3rd, a COM catalog available in Area Collections and 4th an on-line add-on catalog.

Slavic Section

Within this section, non-cataloging use of the catalog is similar to the preceding section, i.e., holdings and entry searching for pre-order information, collection maintenance searching, and reference work. In these activities, one professional spends from 5 to 10% of her time and a student assistant spends between 15 and 20 hours per week at primarily pre-order searching.

Because of the necessity for filling retrospective gaps in the collection and because of the paucity of firm bibliographic information available from this part of the world, it is estimated that the workload involved in searching may double if two catalogs exist. Some of this may be offset by the availability within the section of an on-line catalog terminal or of a frequently updated COM catalog, but the preferences of the staff of this section lie with 1st, an on-line add-on catalog containing on-order/in-process as well as catalog information and with a in-house terminal. Second preference is to keep the present catalog open with links. Both the add-on card catalog and COM catalog options were described as "equally bad."

South Asia Section

One professional in this section spends approximately 5% of his time in pre-order searching and in research for his teaching duties. Because of the unreliability of bibliographic information from this area of the world and because of the dearth of romanized catalog copy available from LC for materials published there, the searching workload could double.

Preferences among the options under discussion are as follows: 1st, an integrated continued card catalog with links; 2nd, any kind of an on-line add-on catalog; and (described again as "equally bad") a COM catalog or an add-on catalog.

Middle East Section

Uses of the public catalog by this section include pre-order and bulk exchange (from LC) searching for holdings and entry verification; collection maintenance searching especially with language and entry problems; and reference assistance to patrons. One student works about 8 hours per week on pre-order searching and collection maintenance searching, while one professional spends from 10 to 15% of his time in the pursuit of all three usages.

The existence of two or more catalogs regardless of format will cause some increase in workload, but no substantial problems are anticipated. The preferences of this section are as follows: 1st, keep the present catalog open with links until such time as L.C. starts totally romanizing arabic script entries and titles; 2nd, an add-on card catalog until L.C. starts totally romanizing arabic script; 3rd, an add-on on-line catalog if Arabic is romanized; and 4th, an add-on COM catalog if Arabic is romanized.

The basic requirement that Arabic script be romanized may continue to be a problem even after L.C. begins doing it since special equipment (keyboard) may be necessary in order to either input information or to search the data base from an Arabic starting point.

RARE BOOK DEPARTMENT

The Rare Book Department searches the public catalog for the purposes of ordering titles, making decisions on gift books, and for serials checking. Possible purchases are checked in dealers' and auction catalogs, and then are searched in the public catalog. Great care must be taken that the exact edition and/or issue is found. Books received as gifts are first examined by the Curator and those which are not going to be kept are weeded out. The remaining books are searched in the public catalog and less than half are kept for accessioning. In the pre-order and gift searching, all titles not found in the public catalog (estimated at 48 to 60 percent) must then be searched in the Rare Book Department's catalog to see if the title has been accessioned but not yet cataloged. Much public catalog searching is done for the purpose of serials maintenance. Items received from Gifts and Exchange, gifts from patrons, and miscellaneous items which have been stored in the Rare Book Department for years must be searched before being added or cataloged. Checking for serials is particularly time-consuming as it is often necessary to check the Official Serials Catalog, then the public catalog to find the proper entry, then back to the OSC for exact holdings. Some titles are also checked in the Rare Book Room Department's catalog, but not on the same basis as monographic titles since serials are cataloged shortly after arrival and are not awaiting cataloging in the accessioned backlog. The majority of the Rare Book Department's catalog searching of all three varieties is for non-current materials.

The Rare Book Department estimates that its staff spends roughly ten to twelve hours a week in catalog searching. This is a conservative estimate and represents a yearly average. In actual patterns of catalog activity, the volume of searching varies widely throughout the year. Pre-order searching is done by the Acquisitions Assistant (clerical) and/or a Student Assistant (Library Assistant A) at the rate of approximately 25 items per week or 1300 items a year. Approximately 5000 gift titles per year are searched by Student Assistants (clerical level). The serials searching comprises about one-third of the workload of the Acquisitions Assistant (clerical). According to a week-long study done by the Department, an average of 2.22 minutes are spent per title searched. At an hourly rate of \$3.83 (an average of a Clerk C and a Library Assistant A salaries) the cost for searching would be 14 cents per title.¹

The Rare Book Department's use of the public catalog is likely to be affected by the catalog alternatives in ways similar to the pattern established in the introduction. Since most of the searching is for non-current materials, it is probable that a great many titles would need to be searched in both catalogs in any two-catalog arrangement. Three particular factors in the Rare Book Department's catalog use need to be

¹ See "Public Catalogue Usage--Rare Books Searching" on file.

mentioned. In an arrangement with an add-on catalog of whatever format, the careful comparing of editions and issues which is so important in the Rare Book Staff's searching will be more difficult. Secondly, the gift and serials searching requires very careful handling of physically fragile and valuable materials. Any additional handling resulting from a second public catalog would place further stress on these volumes. Also, the Rare Book Staff already search in two catalogs (public catalog and Rare Book catalog) for at least half (and probably more than half) of their monographic searching; therefore, a second public catalog would actually result in their checking three files.

The Rare Book Department staff have expressed an interest in the on-line option for Alderman's public catalog because an on-line catalog may afford the opportunity of including in the public catalog brief entries for the accessioned but uncataloged Rare Book materials. This information could be entered locally in the same manner as the on-order information. However, it may not be cost-effective to enter such data retrospectively (i.e., the accessioned records which are already filed in the Rare Book Department catalog). The Rare Book staff feel that it will be necessary to continue their own catalog in a card format (preferably continued) until such a time as an automated catalog can accommodate the level of description and the differentiation for issue or printing-specific records required for the Rare Book cataloging.

MANUSCRIPTS DEPARTMENT

The Manuscripts Department's use of the public catalog is varied. A preliminary search in the public catalog is done by the Manuscripts Cataloger (professional) prior to cataloging the Department's reference books. Additionally, the Cataloger sometimes uses the subject catalog in assigning subject headings and the author-title catalog in establishing names and birth and death dates. The Assistant Archivist (professional) and one Student Assistant use the catalog in serials and maintenance work and in adding copies. Theses and dissertations for which no catalog entry appears in the archives catalog are searched in the public catalog. (This should terminate in the fall when complete records for theses and dissertations will have been added to the archives catalog.) Various other catalog searches are done; the remaining prominent use being the location of a reference work pertaining to collections being cataloged. Approximately five and a half hours per week are spent in catalog use. The Manuscripts Department does not expect any significant change in its staff workload under any of the catalog options.

REFERENCE DEPARTMENT

Reference Room

The Reference Staff use the public catalog primarily for the purpose of patron assistance. In the process of this assistance, the catalog is used for verification of holdings, determination of location, subject searching, and bibliographic verification. Occasionally, the catalog also functions as a reference tool, providing personal birth and death dates, etc. The catalog is searched in the preparation of bibliographies by the Reference Staff. Some searching is also done in the reference collection

development. Additionally, the Reference Staff are responsible for patron instruction in the use of the catalog--both formal programs and on-the-spot instruction.

The Reference Staff is composed of 5 professionals, 2 full-time and 1 half-time Library Assistants and the departmental secretary (1 Clerk-Typist C). Each semester, approximately 60 student hours are allocated. Of this total 400 hours per week, about 200 hours are devoted to staffing the Information and Reference Desks. Scheduling problems sometimes occur and the Information Desk is not always filled.

It is virtually impossible to determine what percentage of this time is spent in actual catalog usage. Questions initiated at the Reference Desk frequently require a catalog search. Questions asked at the Information Desk can sometimes best be answered by a reference title. Patron assistance is not limited to scheduled desk-duty times. Non-scheduled staff help out at the desk when necessary, and are frequently approached for assistance when away from the desk.

Although anticipated changes in search time for the Reference Staff cannot be quantified, it is expected that these changes will fall into line with those described in the introduction, with these differences. The date of publication is unknown or inaccurate for roughly half of the searches conducted by the Department which will mean a higher incidence of searching in two catalogs. Also the Reference Staff do more subject and complete author searches than other library departments. Searches of this sort will always need to be conducted in both catalogs.

Any add-on catalog, regardless of format, would require more in the way of user instruction than a continued catalog. Patrons would need to be alerted to the existence of a second catalog and the importance of searching both catalogs in most instances. Guidelines should be given on which catalog to search or to search first. The differences in the formulations of headings may need explanation. Links, if present, may require an introduction. In the absence of links, users should be instructed to follow through on cross-references.

The format of an add-on catalog will affect the amount of increase in staff time needed for user instruction. An add-on on-line catalog would present the greatest demand on staff time, at least initially. Patrons would require assistance in the mechanical operation of terminals and in the formulation of search strategies. The difficulty of this training could be offset by an on-line catalog system with a built-in instruction module and by coherent guide signs or brochures placed at each terminal. An add-on COM catalog would present the second greatest demand, as many patrons may need assistance in operation of readers. Most likely, patrons would also need to be instructed with regard to searching additional supplements and perhaps a separate on-order/in-process file. An add-on card catalog would require no additional instruction with regard to format.

The continued card catalog option would cause the least increase in Reference Staff time for patron instruction. Users would only need to be alerted to a change in cataloging rules (and in the formulation of headings) and oriented in the use of links.

One change which may be required in the event of an add-on catalog is increased staffing of the Information Desk. The Reference Department would be hard-pressed to provide additional staffing from the pool of its own employees. Alternatives such as scheduling non-Reference staff on the Information Desk may warrant investigation.

Changes are also anticipated in the formal user education programs conducted by the Reference Staff. These include the tours given at the beginning of the school year and the program of instruction done in conjunction with the English Writing 101 classes. The lectures given for both of these programs will need to be expanded to include a more detailed explanation of the public catalog(s) and its format(s). Since the time allotted for these programs is already about the maximum time for optional concentration/reception, the expanded explanation would be included at the cost of cutting back on some of the material currently included in the lectures.

These formal instruction programs reach only a small percentage of the library's patrons. Some means will need to be devised to alert the library users to the existence of any add-on catalog and to give a basic introduction in its use. Some, though perhaps not all, of the staff time required for designing and producing these means will come from the Reference Staff. The "Guide to Alderman Library" will need to be re-written. Other brochures offering explanations of the catalog(s) may be desirable. At the time of initiating any change in the catalog format, advertisements and articles could be published in various university publications. Signs and other guides could be placed in Memorial Hall. Such signs would be particularly important with an add-on card catalog due to its lower visibility (the sudden appearance of an array of COM readers and/or terminals would be attention-getting in itself). It may even be possible to place self-operating slide/tape shows or video or film cassettes which introduce the viewer to Alderman's catalog(s) in Memorial Hall. In addition to the staff time to develop and produce the above measures, costs for materials, printing and advertising, and purchase of equipment will need to be considered.

Public Documents Section

Use of the public catalog by all staff of this section is slight and infrequent enough to indicate that any alternative to the present catalog format will have little effect on them. It should be noted however that their services to the public will suffer if they are not fully trained in order to properly refer their patrons to information not in their collection.

Use of the catalog would be enhanced if at some time in the future magnetic tapes of the Monthly catalog records were obtained and loaded into an on-line catalog. Then Public Documents staff would have quick and easy access to records requested by patrons. Such access, of course, would be limited to the time period beginning when the tapes were made available.

CIRCULATION DEPARTMENT

Circulation Desk

Public catalog usage by this staff is minimal except in the direction of patrons. This workload will certainly increase drastically with any new catalog format. The essential problem here is to keep inadequately trained students (200 hours per week) from giving misinformation about the use of any new or revised catalog. Here again, training will be vital to the success of whatever format the catalog takes.

The new on-line circulation system, scheduled for implementation in 1980, will help Circulation Desk staff answer questions about the card catalog by providing on-line access to highly-used items in the Library's collection. Although the records will not have full bibliographic information, they do contain enough data for determining whether or not the Library has a book and where it is located.

Stacks

The Stack Supervisor and her staff use the public catalog in such close conjunction with the shelf list that it is difficult to distinguish exactly how much time is actually spent using the public catalog itself.

The Supervisor (LA-B) spends approximately 20% of her time during the two regular semesters (Sept. to June) using the shelf list and public catalog for checking patron search requests. About 80% of these search problems can be resolved at the shelf list, but the remaining 20% must be checked against the public catalog because the shelf list does not contain the call number given on the search card. Thus, this person is spending from 1 to 2 hours per week for most of the year actually using the public catalog.

Two half-time clerical people doing inventory work spend about 1/2 hour or less each at the public catalog weekly checking on books for which there are apparently no shelf list cards. They attempt to determine if there is in fact no shelf listing for the books in question or if the anomaly is a matter of a typing or marking error.

It is the opinion of the supervisor that the existence of two catalogs will create no workload increase only if shelf list cards are annotated as to which file (old or new) contains the complete card set. If shelf list cards are not thus annotated, the workload for all of the above activities would increase by a minimum of 75%. If the present catalog is kept open with links, it is estimated that there will be no workload increase other than that caused by implementation of AACRII.

Interlibrary Loan Section

The Interlibrary Loan Section searches the public catalog both on our requests to borrow from other libraries and on requests from other libraries for loans. Borrow requests are searched to be sure that the requested item is not held by this library. Loan requests are searched to determine the

locations of requested items (Alderman or branch), the number of copies, and for the verification of proper editions. Serials photocopy requests must be searched in the serials catalog for verification of holdings.

There were 5010 requests to borrow from our users in 1977-78. Requests average 1.24 minutes of catalog search time each and cost 12.9 cents/request (searching done by a library assistant). Projected 1978-79 cost: \$646.

Total incoming requests (loan and photocopy) from other libraries: 16,255 for 1977-78. Searching for loan requests (12,118 of total) is done by student assistants (80%), and a library assistant (20%). Each request averages 2.5 minutes search time. Projected 1978-79 cost: \$1726.

The 4137 requests for photocopy are searched by a Clerk C (60%), a library assistant (20%), and student assistants (20%). The searches average 3 minutes/request. Projected 1978-79 cost: \$1018.

There are 3 1/2 non-professionals (2 library assistants, 1 clerk-typist, 1 clerk) and 1 professional working in the section. About 100 student hours per week are allocated each semester. Of the total section staff time (290 hours a week), approximately 102 hours per week are spent in using the catalog (35%).

The effects on ILL searching under each alternative are expected to be similar to the effects described in the introduction. No exact estimate of the amount of increase could be obtained. As approximately 15% of our requests to borrow from other libraries are for current materials and 85% are for non-current, it seems probable that up to 85% of them may need to be searched in both catalogs in any two-catalog arrangement. There are no accurate figures for the current/non-current division among the loan requests, but the percentage of current material is higher than among the borrow requests. It is possible that a larger percentage of our borrow requests will be for items which are owned by the library, but which the requestor could not locate because of cataloging charges and possible split catalog files (especially with an add-on catalog). This percentage is currently 9% of the borrow requests.

If the decision is made to close the catalog, it would be helpful to ILL to have on-order/in-process information interfiled with the other catalog records in the new catalog, whatever its form may be.

Reserve Book Room

For the staff of this section, use of the public catalog is extremely intense during three periods of the year for purposes of holdings verification. Because the activities of this section revolve around the three primary teaching periods of the year, intense use of the catalog is the norm during the 6 to 8 weeks preceding the beginning of each semester when reserve lists are received from the faculty.

Staff consists of one Library Assistant, one full-time and four half-time clerical staff and 115 student hours per week. The LA and all other non-student staff members may spend as much as 20% of their time using the public catalog during the periods of intense activity prior to

the beginning of each semester. The necessity for full staffing of the Reserve Desk with the beginning of classes makes the handling of lists received late extremely difficult if not impossible.

The existence of more than one catalog would increase the workload for these users by perhaps as much as 100% until such time as any new catalog contained a large enough number of records for searching to be divided for searching by specific catalog. However, because of the regularity of the workload, this increase will not be an insurmountable burden to Reserve. In fact, the availability of either an on-line catalog terminal or a frequently updated COM catalog in the Reserve Book Room itself might reduce the workload somewhat. The Reserve staff may also in the future be able to access the circulation database from a terminal in the Reserve Room. Since a high percentage of items used for reserve will be on the circulation database, much of the searching might be done quickly and conveniently without even leaving the room. It must be mentioned that the Reserve staff make substantial use of on-order/in-process information available through the public catalog and through Order/Receipt files; therefore, it is essential that this information be as accessible to them if not more accessible than it is at present.

Periodicals Room

The use of the public catalog made by the staff of this section is primarily related to finding out what is in their own collection since their own catalog is incomplete. The necessity for this activity will be neither increased nor decreased by any change in the format or arrangement of the public catalog, however, the time entailed in searching may increase. It will however be essential that the staff of this section be fully trained in how to direct patrons to appropriate locations in the public catalog, whatever its format. At present the Library Assistant in charge of the section spends about 1% of her time at the public catalog in this activity, but estimates she could and ought to spend much more if it were possible to leave the room unattended. The availability of an on-line catalog terminal or a COM catalog within the Room would be of some assistance, but the vast amount of material already in the public catalog and not in the Periodicals Room catalog would still need to be retrieved.

Fine Arts Library

The Fine Arts staff who use the Alderman public catalog use it primarily for preorder searching and collection maintenance activities. One professional and one Library Assistant each spend 10% of their time using the catalog for these purposes.

There will be an estimated increase in workload approaching 100% if two catalogs exist to which the Fine Arts staff does not have in-house access. An on-line catalog with a dedicated terminal in Fine Arts and containing not only current cataloging but also on order/in process information and retrospective serials holdings information is preforced. Barring these programs constituents, the alternative

most preferred and anticipated to cause the least workload increase is an integrated continued catalog with links.

An additional problem faced by Fine Arts Library staff in processing requests for new books is the generally poor quality of the on-order information provided by faculty members, who heavily contribute to the order process. The unreliable nature of the data makes pre-order searching difficult in any case.

Education Library

Two members of this library's staff, one professional and one Library Assistant use the Alderman public catalog only occasionally for collection maintenance purposes. Because the use is so slight, they do not anticipate any substantial increase in this workload regardless of future format of the catalog.

Music Library

For this library, use of the Alderman public catalog is essentially limited to pre-order searching for books, serials, scores and for collection maintenance activities. One student uses approximately five hours per week searching monographic material while one professional spends up to 20% of her time searching serials, scores and doing collection maintenance work.

It is anticipated that for monographic searching in more than one catalog, workload increase will approach 65% since a great deal of retrospective purchasing is done. The availability of an on-line catalog terminal or COM catalog housed in the Music Library would reduce this somewhat for monographic searching. For searching scores in more than one catalog, the workload increase would approach 100% because of the unreliability of imprint information for this material. Even the availability of an on-line catalog terminal or a COM catalog within the Music Library would not significantly reduce this increase.

Of the four alternatives under discussion, this library's preferred alternatives are:

- 1) on-line add-on catalog with on-order/in-process information and a terminal in the Music Library;
- 2) an integrated continued card catalog with links;
- 3) an add-on card catalog; and
- 4) a COM catalog.

Full training of Music Library staff for referring users to the Alderman catalog(s) is essential.

In reference to the future of their own catalog, the Music Librarian has said that for the foreseeable future, she would prefer to maintain an integrated card catalog with links and cross references as necessary. This is a viable possibility for the Music Library because of the very close communication links between the Music Library staff and the special Music Cataloger, a situation which does not exist for other branch or area libraries.

Commerce Library

This library uses the Alderman public catalog primarily for pre-order searching in three time periods during each year, corresponding to each semester. During each of these periods, one Library Assistant and one clerk each spend approximately 10% of their time for one month doing pre-order searching.

The workload will certainly increase, but the small number of items searched will reduce the impact of that increase. The staff of this library has definite preferences among the alternatives discussed both for their own use and that of their patrons. They are as follows:

1. on-line add-on catalog with a terminal in the Commerce Library;
2. a COM catalog with a set in Commerce; and
- 3/4. either an add-on card catalog or a continued integrated card catalog with links.

SCIENCE/TECHNOLOGY INFORMATION CENTER

Because the responsibility for pre-order searching for the Sci/Tech Library and all science departmental libraries lies with the Science Bibliographer and her staff, this activity is concentrated while collection maintenance activities are handled individually within each separate library.

Sci/Tech's interlibrary loan activities will be effected also because approximately 25% of their requests are searched in Alderman as well as Sci/Tech.

Pre-order searching of Alderman's public catalog is handled by one Library Assistant who spends 50 to 75% of her time in this activity. A student assistant spends an additional 15 hours per week in this searching. It is estimated that the existence of two catalogs, whether or not they are available in Sci/Tech, will increase the workload by nearly 100% for the first 12 to 18 months and then decrease rapidly because of the currency of the material ordered by the libraries involved. This will be true however, only if on order/in process information is included in whatever new catalog is instituted.

Because of imprint currency and the practice of ordering science material (except added volumes, added copies and added editions) under title rather than attempting to establish entries, the preference of the staff in this activity is for the option of keeping the present catalog open with links between old and new forms of entry. Second preference is for an add-on card catalog as an interim measure preceding an on-line catalog containing catalog data on-order/in process information as well as serials holdings information, and with a terminal in Sci/Tech dedicated to Sci/Tech technical services use only.

Collection maintenance activities consume approximately 215% of the time of one professional (one hour per week) and this time will be increased somewhat by catalog format but will be increased a great deal more by the adoption of AACRII.

Changes in the Sci/Tech catalog itself as a result of AACR II and decisions about links will surely be drastic but the problem in predicting workload changes here are the same as for various departments within Alderman. The lack of accurate figures on times for types of catalog usage and instruction combined with unknown factors for various formats of catalogs make it almost impossible to predict changes which might take place in working conditions because of changes in the format of the catalog.

It is probable that an on-line catalog in both Alderman and Sci/Tech (and its branches) would be accepted with greater enthusiasm by Sci/Tech and branch patrons than by Alderman patrons. It is certain that the branch library staffs have shown great enthusiasm for this alternative.

Branch Science Libraries

The greatest concern expressed by the science branch libraries has not been with the format of any future catalog, but with the absolute necessity of keeping complete and comprehensibly linked records of their collections. They have also shown great concern for the union catalog aspects of the Sci/Tech catalog. These factors as well as a grave concern for linkage aspects within their own catalogs are unfortunately not analyzable in terms of costs or even workloads at this time.

Most branch libraries have also given considerable thought to the possible space problems caused by different add-on catalog formats. COM readers, on-line terminals, or additional card cabinets would all cause problems with regard to space. Depending upon the library and the form of the catalog, the problem of space would range from slight to critical.

Although most branch science librarians have stated that frequently updated COM catalog would be acceptable, they would ultimately prefer an on-line catalog with serials holdings information included. The added information and ease of operation would help make up for the inconvenience of two separate catalogs. They also felt that some future retrospective conversion of their holdings would be highly desirable.

GRADUATE SCHOOL OF BUSINESS LIBRARY

Since the use of the Alderman catalogs by GSBA library staff is virtually non-existent, there is little concern regarding the ultimate format of the Alderman public catalog. The GSBA librarian has, however, expressed a strong feeling that his own catalog be kept open by using cross-references between headings or by changing all AACR headings to conform to the AACR2 rules.

APPENDICES

APPENDIX 1

SIMULATED LINK-PRODUCTION TIME STUDY

GOAL: To estimate the time required to search, construct and type a two-way link

SOURCE OF CATALOG RECORDS: 15 of the 75 records with headings which would be established differently under AACR 2 (from the "Random Sample" of the archival tapes)

FILES SEARCHED:

- 1) Substitutes for the LC Authority File:
 - a. Alderman authority file (this is the best approximation of the COM LC Authority File even though the Alderman file is card format)
 - b. OCLC terminal -- author search key (this is the best approximation of the on-line LC Authority File; headings were searched only to first response on the terminal on the theory that the on-line LC Authority File should only produce one response per search key)
- 2) Alderman author-title catalog

PARTICIPANTS: 3 professional catalogers; 1 clerk-typist

STATISTICS:

Number of records searched: 15
 Total number of headings on these records (all searched in the LC Authority File substitutes): 23
 Number of these headings which would be established differently under AACR 2: 15
 Number of these headings which were searched in the author-title catalog: 15
 Personal names: 12
 Corporate names: 3
 Number of these headings which needed "complex" links: 1
 Total number of added-entries in the files under the headings searched:
 Counting only the specific headings themselves: 104
 Counting the specific headings and the entries under the parent bodies of headings which are subdivisions of parent bodies: 973

TIMES:

Average time to record and then look up the main entry when the heading searched is an added entry (i.e., to determine which libraries require the link) :
 1 min. 10 sec.
 Average time to type a pair of link authority cards: 5 min.
 Average time to type a pair of link catalog cards: 6 min.
 Total search time in Alderman authority file: 12 min. 49 sec.
 Total search time on OCLC: 5 min.
 Total search time in author-title catalog: see list on the next page

AUTHOR-TITLE CATALOG SEARCH TIMES:

- A. Time to search only the specific heading; main entries are not searched for added-entry headings: 29 min. 17 sec.
- B. Time to search only the specific headings and to search the main entries for added-entry headings : 2 hours 15 min. 1 sec.
(based on the average time per main entry search -- 1 min. 10 sec. -- multiplied by the number of added entries -- 104 -- plus search time A)
- C. Time to search specific headings plus the entries for the parent bodies; main entries are not searched for added-entry headings: 56 min. 40 sec.
- D. Time to search the specific headings plus the entries for the parent bodies and to search the main entries for added-entry headings: 16 hours 29 min. 13 sec. (based on the average time per main entry search -- 1 min. 10 sec. -- multiplied by the number of added entries -- 973 -- plus search time C)

CALCULATED LINK-PRODUCTION TIME TOTALS:

		AUTHOR-TITLE CATALOG SEARCH TIMES			
		A	B	C	D
AUTHORITY FILE SEARCH TIMES	*1.	29min. 17sec.	2hr. 15min. 1sec.	56min. 40sec.	16hr. 29min.
	**2.	42min. 5sec.	2hr. 27min. 49sec.	1hr. 9min. 28sec.	16hr. 42min. 1sec.
		Plus the time to type the link authority cards (25 min. total):			
	1.	1hr. 7min. 5sec.	2hr. 52min. 49sec.	1hr. 34min. 28sec.	16hr. 52min. 1sec.
	2.	59min. 17sec.	2hr. 45min. 1sec.	1hr. 26min. 40sec.	16hr. 59min. 13sec.
		Plus the time to type the link catalog cards (30 min. total):			
	1.	1hr. 37min. 5sec.	3hr. 22min. 49sec.	2hr. 4min. 28sec.	17hr. 22min. 1sec.
	2.	1hr. 29min. 17sec.	3hr. 15min. 1sec.	1hr. 56min. 40sec.	17hr. 29min. 13sec.

- *1. Authority file searched: Alderman authority file (12 min. 49sec.)
- **2. Authority file searched: OCLC terminal, author search (5 min.)

FINDING:

The total times (searching times plus time for typing link authority and catalog cards) were divided by 15. The results are:

Average minimum time per link: 4 min. 28 sec.
Average maximum time per link: 1 hr. 10 min.

QUALIFICATIONS:

Most, if not all, of the variables in this study need qualification. This means, of course, that time time per link which was derived is highly suspect. The LC Authority File is not available to search at this time. Although the intent was to substitute files which seemed likely to require approximately the same amount of time per search as the LC Authority File s might, it is not at all certain that this goal was met. Using a card file in place of a COM file is especially questionable. Unfortunately, there was no large file of name headings in COM format available to search. Also, the assumption that the time required to receive the first response to an author search key on OCLC is similar to the time which will be required to do an authority search when the LC Authority File is available on OCLC may be way off-base.

The next problem arises with the source of the catalog records. In order to expedite the time study, records were selected which were suspected to require links for at least one of the headings on the record. This resulted o in 15 headings which would require links out of 24 headings searched in the LC Authority File substitute, or 1.6 headings searched in the substitute LC Authority File per link. In actuality, the ratio should be more like 9 headings searched per link. This means that the time for searching in the authority file for the number of links which resulted should have been higher which would mean a higher total time per link.

Of the fifteen changed headings searched in the author-title catalog, three were corporate names with fairly lengthy files, which means that 20 of the changed headings were corporate names. This may not be the actual percentage of corporate names when links are produced. These fairly lengthy files may have been lengthier than a true average length of file. Also, every heading searched in the catalog was found because our actual cataloging records were the source of the headings. In reality, new headings found to have different pre-AACR 2 forms in the LC Authority File will not always have an entry in our catalog under the old forms. This may have made the time figures too high.

A number of decisions concerning how links will be made must be settled before a true time estimate can be derived. It is not clear that the Cataloging Department will be required, or able, to provide links for the branch libraries. It is this aspect of linkage work which could raise the time per link to 1 hour 10 min. or even higher. There may be significant time differences depending on when the authority work is done (possibilities are at the time of cataloging, after the catalog record appears, etc.), who does it and other such factors. If not initially, then after some amount of time, procedures may be stream-lined, resulting in time-savings.

One other qualification must be stated. The participants in this study, although careful not to work at breakneck speeds, did work in an uninterrupted fashion and were unavoidably time-conscious. Actual work habits are not so concentrated. This may have resulted in lower time figures than what would occur in normal work situations. However, offsetting this factor, is the unfamiliarity of the participants with link work per se. Once the work routines become familiar, it may be that the searching, composing, and typing of links will be done more rapidly.

APPENDIX 2

ADDITIONAL OPTIONS

At a rather late date in its proceedings, the task force learned of two new options which are being considered by certain other libraries. One is a variant on the continued catalog option; the other is an alternate way of dealing with links. Rather than work these options into the main body of this report, implying thereby that these options have been investigated as thoroughly as the other options, we have decided to examine these new alternatives in this appendix.

The Princeton Option

The Princeton Library has recently announced its decision to adopt a unique variant of the continued card catalog option. All new cataloging will be filed into the card catalog, including records with AACR 2 forms of headings which had been established in the catalog in pre-AACR 2 forms. As these new AACR 2 forms of headings are filed into the catalog, those records filed under pre-AACR 2 forms of these same headings will be transferred to a separate, inactive catalog. A one-way link will be made from the new heading to the old heading in the inactive catalog. A cross-reference to the new heading from the old heading will be placed in the continued catalog. In this way, the largest file is the file into which all current cataloging is entered. Searching in two files would occur in less than 10 percent of all instances, so that, from the catalog-user point of view, this is a cost-effective option.

However, from the technical processing point of view, this would remain a costly option. As with most other options which require link-construction, the headings which need links must be identified. This would mean searching all headings for possible pre-AACR 2 forms. A one-way link would be made. The entries under the pre-AACR 2 forms would be transferred to the inactive catalog. Although this transfer would not require the shifting of adjacent files which is necessary with interfiling in one continued catalog, some time would still be spent in shifting the cards to the inactive catalog. One effect of this option which would prove cost-effective at a later date is that it provides a separate file of all entries with pre-AACR 2 forms of headings -- a Useful arrangement should a project ever be undertaken to convert these headings to AACR 2 forms.

Alternate Link Option

It has recently been reported that the Library of Congress is contemplating a program to produce, in batch mode, all of the links between AACR 2 and pre-AACR 2 forms of headings at one time. Very little information is available at this time regarding the details of this procedure, however, the report is that the resulting set of linking cards could be purchased as a block by any library.

Once a library has purchased this set of link cards, the library has two options. The cards could be kept in the technical services department of the library, and the links filed into the catalog(s) gradually, as the AACR 2 forms are used in cataloging. Alternately, all the links for which the library's catalog contains the pre-AACR 2 form could be filed into the catalog at once, whether or not any entries under the AACR 2 form have yet appeared in the catalog. This would result in "blind" links which from a catalog-user point of view could create serious problems.

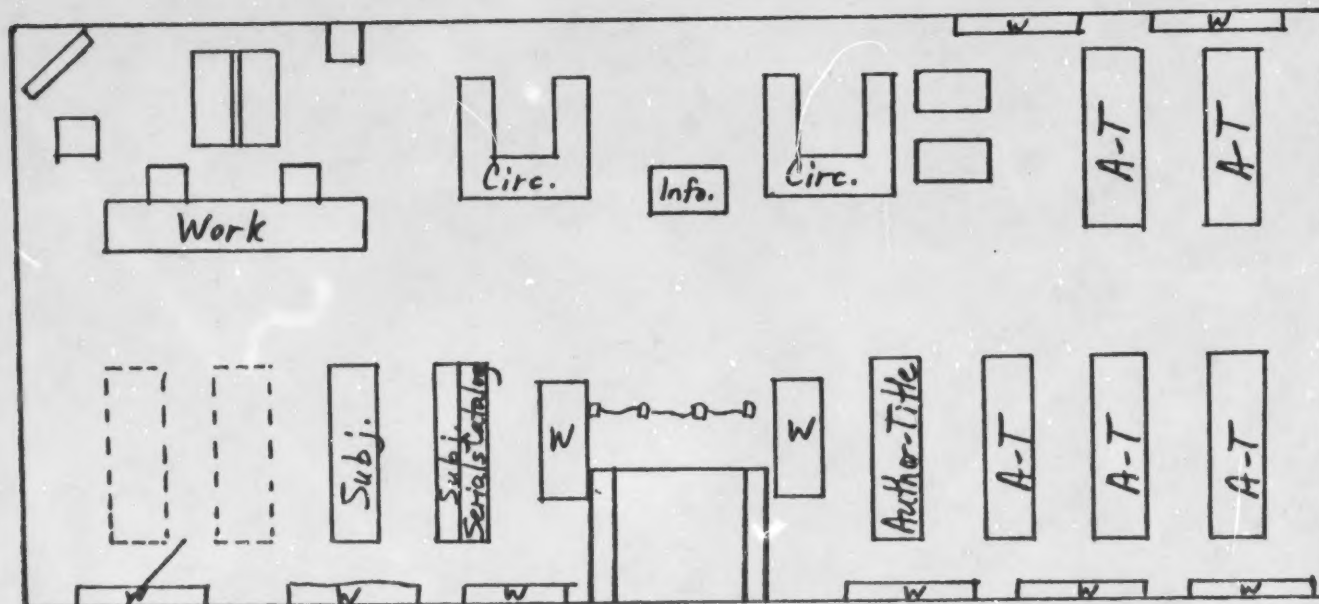
It is nonetheless, a very cost-effective procedure from the technical processing point of view. All (or very nearly all) of the work related to link production would be reduced to searching for the pre-AACR 2 headings and then filing the necessary links for these heading. This is an oversimplification, as it fails to take into account those headings which are in this library's catalog but not in LC's catalog. Also, some separate consideration would need to be given to the application of this procedure to branch library catalogs. Furthermore, it seems improbable that LC will be able to produce all of the links for the headings even in its catalog at one time. Still, this option merits further investigation and serious consideration.

APPENDIX 3MEMORIAL HALL LAYOUTS

Following are possible layouts for Memorial Hall under the various alternative future forms of the catalog.

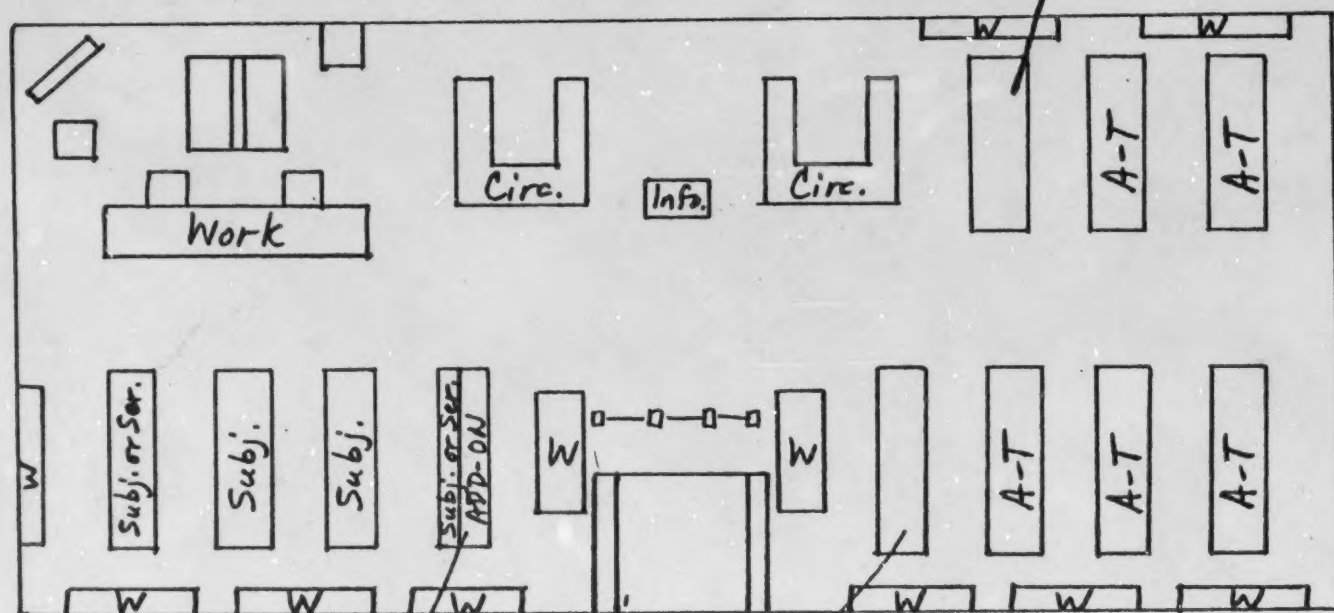
Comments

- 1 - Upon completion of the Clemons library, having a lounge area in Memorial Hall may well become less important, although still a desirable option. Other space in the library could become available for this purpose.
- 2 - These layouts diagram the old card catalog as being continued in card form, if the decision is made to close it. The possibility of eventually microfilming, etc., this closed catalog exists, thus making a great deal of additional space available if that step should be taken.
- 3 - In layouts 3 and 4 the area for microform readers and/or computer terminals has been located in the northwest corner of Memorial Hall. In terms of lighting, this area receives the least amount of direct sunlight. The readers and terminals would probably suffer least there from possible brightness from the windows.
- 4 - These layouts diagram the circulation desk area as it appears at present. The new circulation system may well call for a different configuration in that area.



CONTINUATION OF PRESENT CARD CATALOG

Possible consolidation
of subject catalog
ranges — additional
space made available
here (or ⁱⁿ any of the 4 ranges
on this side of Mem. Hall)
could be used for necessary
future shifts of the author-title catalog



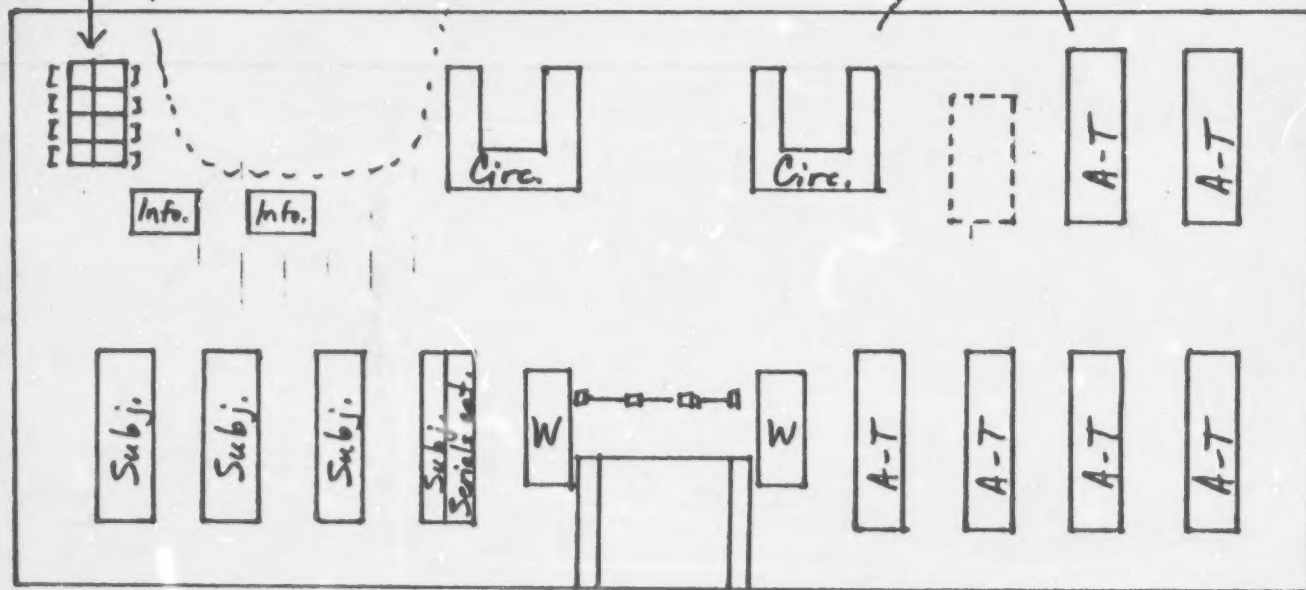
ADD-ON CARD CATALOG ALTERNATIVE

Other possible locations for add-on card catalog—each has relatively easy access with work areas nearby—either would necessitate shifting or consolidation of parts of the auth-title catalog and/or the serials catalog & subject catalog

Microfiche readers (8)
on a 4' X 7 1/2' index
table

Space for
Lounge area or
other use

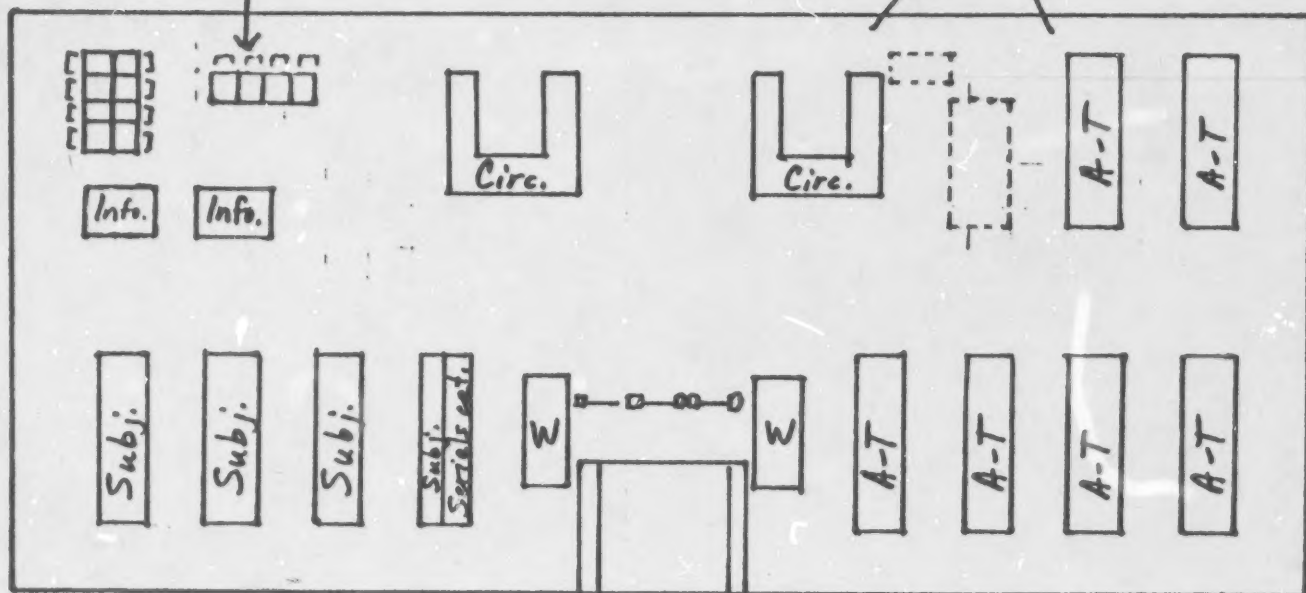
Space for desks or
possible separate
files (can accommodate
one catalog cabinet
range)



ADD-ON MICROFICHE CATALOG

Index table
for computer terminals

Space for desks or
possible separate
files



ADD-ON ON-LINE CATALOG

CATALOGING DEPARTMENT
TOTAL AND UNIT COSTS
1973-78

	<u>WAGES</u>	<u>SOLINET</u>	<u>OTHER CATALOG CARDS</u>	<u>TOTAL COST</u>	<u>% CHANGE</u>
1973/74	\$419,492.94	-	\$24,464.86	\$443,957.80	
1974/75	442,423.05	-	18,709.41	461,132.46	+3.87%
*1975/76	447,246.51	\$46,543.78	11,350.70	505,140.99	+9.54%
1976/77	472,473.84	68,549.32	8,137.03	549,160.19	+8.71%
1977/78	501,922.94	81,432.43	8,046.75	591,402.12	+7.69
TOTAL	\$2,283,559.28	\$196,525.53	\$70,708.75	\$2,550,793.56	

	<u>TOTAL COST</u>	<u>TOTAL TRANSACTIONS</u>	<u>COST PER TRANSACTION</u>	<u>TOTAL HOURS</u>	<u>COST PER HOUR</u>	<u>TRANSACTIONS PER PERSON PER HOUR</u>
1973/74	\$443,957.80	93,118	\$4.77	111,375.25	\$3.99	0.84
1974/75	461,132.46	116,758	3.95	111,027.00	4.15	1.05
*1975/76	505,140.99	95,997	5.26	104,425.75	4.84	0.92
1976/77	549,160.19	102,103	5.38	103,883.00	5.29	0.98
1977/78	591,402.12	93,401	6.33	104,905.00	5.64	0.89
TOTAL	\$2,550,793.56	501,377	\$5.09	535,616.00	\$4.76	0.94

	<u>COST PER TRANSACTION</u>	<u>% CHANGE</u>	<u>COST PER HOUR</u>	<u>% CHANGE</u>	<u>TRANSACTIONS PER HOUR</u>	<u>% CHANGE</u>
1973/74	\$4.77	-	\$3.99	-	0.84	-
1974/75	3.95	-17.9	4.15	+4.0	1.05	+25.0
*1975/76	5.26	+33.2	4.84	+16.6	0.92	-12.4
1976/77	5.38	+2.3	5.29	+9.3	0.98	+6.5
1977/78	6.33	+17.7	5.64	+6.6	0.89	-9.2

	<u>TOTAL COST OF CATALOGING</u>	<u>% CHANGE TOTAL COST</u>	<u>CONSUMER PRICE INDEX</u>	<u>% CHANGE C.P.I.</u>	<u>% CHANGE DIFFERENTIAL**</u>
1973/74	\$443,957.80	-	148.0	-	-
1974/75	461,132.46	+3.87	162.3	+9.66	-5.79
*1975/76	505,140.99	+9.54	171.1	+5.42	+4.12
1976/77	549,160.19	+8.71	182.6	+6.72	+1.99
1977/78	591,402.12	+7.69	196.7	+7.72	-0.03

* First year using SOLINET/OCLC.

** % change total cataloging cost minus % change in C.P.I. If negative, cataloging costs increased slower than the Consumer Price Index for a given year, and vice-versa.

CATALOGING DEPARTMENT
WAGES AND COST/HOUR
1973-78

<u>HOURS</u>	<u>STUDENTS</u>	<u>STATE CLASS.</u>	<u>FACULTY</u>	<u>TOTAL</u>	<u>% CHANGE</u>
1973/74	8,991.25	76,393.00	25,991.00	111,375.25	
1974/75	9,670.00	75,682.00	25,675.00	111,027.00	+0.31
*1975/76	9,072.75	70,073.00	25,280.00	104,425.75	-5.95
1976/77	7,424.00	71,258.00	25,201.00	103,883.00	-0.52
1977/78	7,696.00	71,297.00	25,912.00	104,905.00	+0.98
TOTAL	42,854.00	364,703.00	128,059.00	535,616.00	

<u>WAGES</u>	<u>STUDENTS</u>	<u>STATE CLASS.</u>	<u>FACULTY</u>	<u>MISC.</u>	<u>TOTAL</u>	<u>% CHANGE</u>
1973/74	\$18,967.87	\$256,950.71	\$143,520.36	\$54.00	\$419,492.94	
1974/75	28,430.08	264,124.57	149,801.56	66.84	442,423.05	+5.47
*1975/76	22,054.39	269,564.57	155,618.54	9.01	447,246.51	+1.09
1976/77	17,069.68	287,800.36	167,578.20	25.60	472,473.84	+5.64
1977/78	20,259.73	305,246.87	176,325.50	90.84	501,992.94	+6.25
TOTAL	\$106,781.75	1,383,687.08	\$792,844.16	\$246.29	\$2,283,559.28	

<u>COST/HR</u>	<u>STUDENTS</u>	<u>STATE CLASS.</u>	<u>FACULTY</u>	<u>TOTAL</u>	<u>% CHANGE</u>
1973/74	\$2.11	\$3.36	\$5.52	\$3.77	
1974/75	2.94	3.49	5.83	3.98	+5.57
*1975/76	2.43	3.85	6.16	4.28	+7.54
1976/77	2.30	4.04	6.65	4.55	+6.31
1977/78	2.63	4.28	6.80	4.79	+5.27

*First year using SOLINET/OLC

CATALOGING DEPARTMENT
TRANSACTIONS
1973-78

NEW TITLES	ORIGINAL CATALOGING	LC/SOLINET OR TITLE II	TOTAL
1973/74	7,310	41,342	48,652
1974/75	6,664	46,026	52,690
*1975/76	4,810	37,755	42,565
1976/77	5,902	42,190	48,092
1977/78	4,328	41,500	45,828
TOTAL	29,014	208,813	237,827

ADDITIONS	NEW TITLES	ADDED COPIES	ADDED VOLUMES	TOTAL
1973/74	48,652	7,264	25,360	81,276
1974/75	52,690	7,730	29,212	89,632
*1975/76	42,565	5,028	20,530	68,123
1976/77	48,092	5,417	27,162	80,671
1977/78	45,828	6,671	20,246	72,745
TOTAL	237,827	32,110	122,510	392,447

ALL TRANS- ACTIONS	ADDITIONS	LOST AND WITHDRAWALS	TRANSFERS	RECATS AND RECLASSIFY'S	TOTAL
1973/74	81,276	4,295	3,245	4,302	93,118
1974/75	89,632	19,326	3,094	4,706	116,758
*1975/76	68,123	21,155	4,545	2,174	95,997
1976/77	80,671	6,735	12,750	1,937	102,103
1977/78	72,745	3,995	14,738	1,923	93,401
TOTAL	392,447	55,506	38,382	15,042	501,377

*First year using SOLINET/OCLC

SOLINET STATISTICS
1975-78

I. Items processed

	(1) TOTAL TITLES	(2) TOTAL FTU'S	(3) BILLABLE FTU'S	(4) %	(5) UVA INPUT	(6) %
1975-76	37,718	33,869	28,769	84.94	5,100	15.06
1976-77	44,567	40,832	35,177	86.15	5,655	13.85
1977-78	50,608	44,962	40,477	90.03	4,485	9.97
TOTALS	132,893	119,663	104,423		15,240	
AVERAGE	44,298	39,888	34,808	87.26	5,080	12.74

II. Cards received

1975-76	268,321
1976-77	354,188
1977-78	406,042
TOTAL	1,028,551

III. Costs

	COST OF HITS	COST OF CARDS	COMMUNICATIONS COSTS	MISC. COST	TOTAL COST
1975-76	\$31,744.66	9,122.87	3,503.15	2,309.50	46,680.18
1976-77	49,199.31	13,664.23	3,660.90	2,024.88	68,549.32
1977-78	58,795.15	15,835.74	3,404.60	2,405.18	81,432.43
TOTALS	139,739.12	38,622.84	10,568.65	6,739.56	196,661.93

IV. Unit Cost

	TOTAL COST	TOTAL TITLES	COST PER TITLE
1975-76	\$46,680.18	37,718	\$1.24
1976-77	68,549.32	44,567	1.54
1977-78	81,432.43	50,608	1.61

Notes

- (1) Total number of copies of all works cataloged.
- (2) Total records used for input; column 3 + column 5.
- (3) OCLC records used by UVA.
- (4) Column 3 + column 2.
- (5) Original cataloging input by UVA. into OCLC database.
- (6) Column 5 + column 2.

Appendix 5A Report on the Growth of the Card Catalog

Robert A. Seal, Chairman
Committee on the Future
of the Card Catalog
15 May 1979

Introduction

In the absence of detailed, daily counts of cards being filed in the catalog, the problem of determining catalog growth is difficult at best. Cards and slips originate from several sources within the Library and obtaining accurate, or even any, statistics on their numbers is often impossible. Nevertheless, estimates of projected growth can be made, based on the statistics that do exist and on samples and measurements taken over time of the catalog's size.

Why is catalog growth of interest? First, from a practical point of view, space in Alderman Library and its branches is limited and becoming more crowded as each year passes. Card catalogs, one occupant of that space, are growing fairly rapidly and, in some instances, are nearly full. As a result, it is very unusual for a year to pass in which one or more new card cabinets has not been added somewhere in the Library system. Because of diminishing space, the problem of where to place the new catalog is often a difficult matter.

The growth of the catalog is also a financial burden, both in terms of having to purchase new equipment and in terms of maintenance. Because the University of Virginia Library system is highly decentralized, new catalog cabinets are frequently purchased. The cost of these new catalogs for Alderman and its branch libraries is a drain on the Library's equipment budget. Card cabinets will continue to be needed, as long as books are purchased and cataloged. There is no likelihood of this need lessening, unless radical changes in the format of the catalog occur.

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Catalog maintenance continues to consume a major portion of staff time and money. Recent estimates indicate that about \$100,000 of the Library's budget is spent annually on maintaining the various card catalogs in our libraries. Filing alone accounts for \$80,000 per year in expenditures, consuming over 16,000 hours in staff time annually. As the catalog grows, these costs will rise and amount of time needed to maintain the files will increase.

In October 1978, the combined catalogs¹ of Alderman Library alone contained 5.5 million cards, growing at an annual rate of approximately 300,000 cards. The branch libraries account for an additional 1.6 million cards. Cataloging and related maintenance accounts for 42 percent of the annual library budget. Forty-seven percent of that is outside the Cataloging Department.

While it was known that the card catalog is growing rapidly and is increasingly difficult to maintain, these questions did not come into focus until the formation of the Committee on the Future of the Card Catalog in July, 1978. This Committee, like those at other institutions, was formed to study the impact of the new Anglo-American Cataloging Rules (AACR2) and the closing of the Library of Congress catalogs, both scheduled for January 1, 1981. In beginning its work, the Committee realized that it needed to determine the current cost of cataloging and also how certain departments and routines might be affected by the aforementioned events before it could answer the question of whether or not to close the card catalog.

¹Author/title, subject, serials, newspapers, and shelflist.

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The question of the size and expansion rate of the card catalog was a natural outgrowth of this study. How fast the catalog was growing would determine how often new catalog cabinets would need to be purchased, whether or not there was room for new cabinets, and most importantly, whether or not a large, growing catalog could continue to be easily maintained for the foreseeable future. How soon the various catalogs, Alderman in particular, would be full, was a key question to be answered.

The purpose of this report is to provide answers to those questions so that the Committee on the Future of the Card Catalog can deal with these issues in writing its final report and in making recommendations.

Methodology

How can the growth of the card catalog be determined? The best and most accurate way would be to keep exact daily counts of cards and slips filed. Unfortunately, this is a time-consuming and tedious task, and questionable in value. An easier way would be to keep track of the number of inches or centimeters of cards filed on a daily basis. Though tedious, it is not as time-consuming or difficult. It is important, however, to distinguish in such statistics, which cards and slips are new and which are merely re-files.

For example, statistics maintained by the Catalog Maintenance Section showed that an average of 38.6 inches were filed in the author/title catalog each week during the period November 1, 1976, through March 2, 1979. A weekly figure of 17.6 inches was similarly obtained for the subject catalog. Unfortunately, these statistics include both new cards and refiles. No breakdowns were made. Estimates by various cataloging

staff members, however, indicate that one-third to one-half of all cards filed are re-files, with one-half being a frequent guess. Since exact figures are not available on the number of inches of new cards alone, it is difficult to make an accurate estimate of growth based on inches filed per day.² Of course, the Cataloging Department is not the only source of filing, and therefore cannot be the sole determining factor anyway. This will be discussed in more detail later.

Another way to gauge catalog growth is to utilize statistics on the number of new titles added each year. If one knew the average number of cards per card set for new titles, it would be fairly easy to estimate the number of new cards being added annually to the catalog.

Using the Cataloging Department figures for the last five years, an average number of new titles and card sets added per year can be derived for Alderman and each of the branches. One cannot use the highest year of the last five, or merely the last year, since neither figure would adequately be describing a trend, and thus could not be used to predict future growth. The five-year-mean approach assumes linear growth in the future, even though there may be large increases or decreases in catalog growth in one or more libraries. Fluctuations from the mean, caused by transfers, withdrawals, etc., are difficult, if not impossible to anticipate. Consequently, predictions for individual libraries are impossible to make in most cases.

²Actual numbers of inches of new cards filed in the shelflist have been recorded since October, 1978. The average per month has been 37.92" or about 455" per year.

Instead of the five-year-average method, one could try to use curve fitting techniques to predict future trends. Curve fitting is a statistical technique in which data are plotted on a two-dimensional graph of quantity vs. time, for example. The line drawn through the points on the graph can either be a straight line or an exponential, logarithmic, or power curve. By extending the line, one can predict what the quantity will be at a certain point in time. Such a method could be used to predict future growth of the card catalog. The problem with this approach is the need for many data points (more than the five that are available) to get a meaningful fit. In fact, in nearly all cases, the data for each library, when tested for a fit with the four types of curves, best fit a straight line. Lacking additional data, it was decided to assume linear growth for all libraries, based on the five-year average of new titles added. It should be noted that a small number of branches have actually steadily decreased in new titles added over the past five years, while others have fluctuated greatly and still others have grown evenly.

Table I shows the number of new titles, and therefore new card sets, added in each of the last five years (1972-78) for all libraries. A five-year average was derived from these figures. In Table II, Annual Growth of Card Catalogs, the average number of card sets was multiplied by the number of cards per set (the Conversion Factor³). The result is the number of cards added per year which have come from Alderman Cataloging. It does not include any additional slips, guide

³The derivation of this number is discussed in detail in Appendix I.

TABLE I. GROSS ADDITIONS (NEW TITLES = CARD SETS), 1973-78

	73-74	74-75	75-76	76-77	77-78	AVERAGE
Archives	-	-	-	594	448	521.0
Astronomy	181	153	179	189	161	172.6
Bio/Psych	510	641	480	514	425	514.0
Chemistry	244	168	162	87	211	174.4
Clemons	1,725	2,293	896	575	2,129	1,523.6
Commerce	-	-	-	384	227	305.5
Education	2,271	2,623	1,937	1,798	1,446	2,015.0
Engineering	356	696	630	783	644	621.8
Fine Arts	3,107	3,777	3,653	4,986	3,977	3,900.0
GSBA	-	2,640	2,743	3,624	4,903	3,478.3
Manuscripts	-	-	-	38	72	55.0
Math	403	535	301	436	434	421.8
Physics	512	418	237	304	260	346.2
Rare Books	2,642	1,960	1,584	1,854	1,573	1,922.6
Sci/Tech	-	-	2,646	3,501	4,161	3,436.0
Sci Branches ¹	2,206	2,611	1,989	2,313	2,135	2,250.8
Alderman ²	52,078	58,156	46,866	52,144	49,760	51,801.8
<u>Total</u>	64,490	74,893	62,899	72,200	72,619	69,420.2

¹Excluding Sci/Tech.²Includes card sets for branch libraries and Slavic materials.

TABLE II. ANNUAL GROWTH OF CARD CATALOGS¹ (CARD & INCHES)

LIBRARY/CATALOG	CARD SETS	NO. OF CARDS	ADJUSTMENTS	TOTAL CARDS	TOTAL INCHES	CONVERSION FACTOR (#CARDS)
Alderman						
A/T	-	129,503	+7,069 ²	136,572	1,437	2.5
Subject	-	103,602	-14,223 ³	89,379	941	2.0
Shelflist	-	51,801	-	51,801	545	1.0
<u>Total</u>	51,801	284,906	-7,154	277,752	2,924	5.5
Sci/Tech	3,436	20,616	16,512 ⁴	37,128	391	6.0
Astronomy	173	865	-	865	9	5.0
Astro SL ⁵	-	173	-	173	2	1.0
Math	422	2,110	-	2,110	22	5.0
Math SL	-	422	-	422	4	1.0
Bio/Psych	514	2,570	-	2,570	27	5.0
Bio/Psych SL	-	514	-	514	5	1.0
Physics	347	1,735	-	1,735	18	5.0
Physics SL	-	347	-	347	4	1.0
Engineering	622	3,110	-	3,110	33	5.0
Engineering SL	-	622	-	622	7	1.0
Chemistry	175	1,050	-	1,050	11	6.0
Commerce	306	1,836	-	1,836	19	6.0
Education	2,015	10,075	-	10,075	106	5.0
Education SL	-	2,015	-	2,015	21	1.0
Fine Arts	3,900	23,400	-	23,400	246	6.0
Music	831	4,986	-	4,986	52	6.0
Archives	521	2,866	-	2,866	30	5.5
Manuscripts	55	303	-	303	3	5.5
Rare Books	1,923	11,538	-	11,538	121	6.0
Periodicals	-	422	-	422	5	1.0
(Microforms ⁶)						

¹Average yearly growth, 1973-78.²Law and Health Sciences main entry cards.³Science subject cards are not filed in Alderman's catalog.⁴Includes Health Sciences main entries, non-Science Q, R, S, & T classification books, and card sets for branch science libraries.⁵SL = shelflist; only listed for those libraries which maintain separate cabinets for their shelflists.⁶The Periodicals (Microforms) catalog only receives a main entry card for new titles.

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cards, cross-references, etc. The third column in Table II (Adjustments) reflects factors which cannot be accounted for by new titles added.⁴ Next, the growth rate in inches was computed by dividing the number of cards added per year by 95, the number of OCLC cards in one inch.

This figure, used in conjunction with present catalog size, gives a rough, but fairly accurate indicator of yearly growth. In October, 1978, members of the Committee on the Future of the Card Catalog painstakingly measured the number of inches in each of the card catalogs in the University Library system. The result of their efforts is Table III, a listing of the various catalogs and how much space is available for future growth.

In most cases, the usable space per drawer was computed by subtracting three inches from the length of the drawer. Actually, in many cases only two inches are unusable, depending on the brand of catalog cabinet, but since it becomes more and more difficult to file beyond three inches from the end, three was chosen as unusable for most drawers. The number of usable inches per drawer was multiplied by the number of drawers to obtain the total number of inches available for filing. The number of inches of existing cards for each catalog was then subtracted from the total number of usable inches to yield the total number of inches available for growth.

⁴For Alderman's author/title catalog, additions are necessary for Law and Health Science main entry cards. For the Alderman subject catalog, the approximate number of science subject cards must be subtracted since they are only filed in the Sci/Tech catalog. For Sci/Tech, three adjustments were made: for Health Sciences main entries, for non-science library Q, R, S, and T classification books, and for card sets for branch science libraries since Sci/Tech is a union science catalog.

TABLE III. LIBRARY CATALOGS: AVAILABLE SPACE¹ & YEARS TO GO BEFORE "AT CAPACITY"

	No. of drawers	Length of drawers (inches)	Usable inches per drawer	Total usable 'inches	Inches used	Inches available	Growth rate ² per year (inches)	Years to go
Alderman								
A/T	3456	15	12	41,472	30,882	10,590	1,437	7.4
Subj.	2548	15	12	30,576	10,969	19,607	941	20.8
Serials	338	15	12	4,056	2,084	1,972	-3	-3
Shelflist	1529	14 3/4	12	18,348	11,212	7,136	545	13.1
Newspaper	26	15	12	312	152	160	-3	-3
Sci/Tech								
Astronomy	30	15	12	360	174	186	9	20.7
Astro. SL ⁴	11	15	12	132	50	82	2	41.0
Bio/Psych	45	17 1/2	14 1/2	653	287	366	27	13.6
Bio/Psych SL	6	16	14	84	79	5	5	1.0
Chemistry	60	16	13	780	425	355	11	32.3
Engineering	126	15	12	1,512	1,352	160	33	4.9
Engr. SL	40	15	12	480	294	186	7	26.6
Engr. Serials	30	15	12	360	131	229	-3	-3
Math	40	15	12	480	315	165	22	7.5
Math SL	14	15	12	168	84	84	4	21.0
Physics	30	15	12	360	345	15	18	0.8
Physica SL	18	15	12	216	95	121	4	30.3
Commerce								
Education	120	15 3/4	12 3/4	382	45	337	19	17.7
Educ. SL	45	13	10	450	232	218	21	10.4
Fine Arts	270	16	13	3510	2459	1051	246	4.3
(slides)	54	15	12	648	418	230	-3	-3
Music	144	15	12	1728	999	729	52	14.0
Archives								
Manuscripts ⁶	160	23	20	3200	1584	1616	30 ⁵	-
Rare Books ⁶	164	23	20	3280	2363	917	35,7	-
Periodicals (Microforms)	60	15	12	720	576	144	5	28.8

¹As of October 1978.²Based only on new titles added.³Unknown(insufficient data).⁴SL = shelflist.⁵Growth rate difficult to predict since the vast majority of titles cataloged are done internally by the Manuscripts Department.⁶Main catalog; excludes special card files.⁷For Manuscripts, this growth rate refers to the Reference card file (4 drawers).

The next column, Growth Rate Per Year (obtained from Table II), was divided into the number of available inches in each catalog to predict how many years before the catalog would be full, if based only on the number of new card sets added. These figures may be subject to debate, and well they should, because they do not take into account other types of cards and slips which are added to each card file. Nevertheless, they can be considered to represent the least amount of growth expected for the foreseeable future.

A few of the figures are meaningless, however. Take the Biology/Psychology Library, which according to recent estimates, is 113% full in terms of books on the shelves. Theoretically, the card catalog there cannot grow any more because for every volume (and card set) added, a volume must be transferred to Sci/Tech. Transfers of large journal backruns to Sci/Tech can allow for some growth of monographic titles, but such growth is minimal. Therefore, to say that Biology/ Psychology's card catalog has 13.6 years to go is not exactly accurate.

Other Growth Factors

To more accurately reflect the catalogs' growth, one must take into account other factors and somehow adjust the figures in Table III accordingly. Table IV lists all the types of cards and temporary slips filed into the catalog by the Cataloging staff. The first item, cards for newly cataloged titles, both OCLC and manual, represents the vast majority of input to the catalog. These figures are reflected in the previous section, as is item number 4, Law and Health Sciences main entries.

TABLE IV. TYPES OF CARDS FILED BY THE CATALOGING DEPARTMENT

- 1) Cards for newly cataloged titles^a (OCLC and manual)*
 - a. including card 2's (& 3's & 4's . . .) on main entry
- 2) Refiles
 - a. added copies
 - b. added volumes (monographic sets)
 - c. transfers
 - d. corrections
 - e. recataloging
- 3) Cross references*
- 4) Law and Health Sciences main entries*
- 5) Temp slips for standing orders
- 6) Revisions which necessitate additional cards*
 - a. change of series decision (generating new series added entries)
 - b. replacing old style series added entry cards
 - c. change in subject headings where single old heading results in 2 new headings
 - d. other
- 7) On-order slips for single-title continuations
- 8) HRAF cards*
- 9) Guide cards*
- 10) Plastic overlays*
- 11) History and information cards*

^aIncludes microform analytics

*Items which contribute to the growth of the card catalog

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Of the remaining items in Table IV, only those with *'s affect the growth of the catalog. Regretably, no accurate yearly figures are available for these cards. Separately, they are insignificant when compared to growth due to new card sets. Yet together they do contribute somewhat to the overall picture of catalog expansion. The question is how to determine this factor reliably within some tolerable amount of error.

One other not-to-be-ignored contributor to catalog growth is the yellow order slip, filed daily by the Acquisitions Department. The number of slips filed per year are fairly easy to quantify (approximately 70 inches) since they are about equal to the number of titles ordered plus around 1500 slips annually for books not officially ordered by Acquisitions. But because of fluctuations in buying patterns and book budgets, and because slips don't always get pulled when they should, predicting the number of slips in the catalog is not an exact science. All we can say is, 70 inches of order slips are filed each year and a large portion is pulled when the cards are filed. The difference, impossible to calculate, is the growth factor attributable to the yellow slip.

What needs to be determined, then, is the effect of both the yellow order slips and the items from Table IV. Since no figures are available,⁵ this growth must be inferred by other methods. One technique is to simply measure the catalog several times over a number of years to

⁵For yellow order slips, we know how many are filed, but we don't know how many are pulled. The difference, the key figure, is unknown.

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determine overall growth. Sample measurements of the catalog could be taken in lieu of complete measurements, although they are not as exact. A monthly or yearly growth rate could be derived, from which is subtracted the projected growth rate based on new card sets added. The difference, then, would be the factor due to order slips, cross-references, etc. In theory, this factor could, with some certainty, be applied to all catalogs, but since practice varies so much from branch to branch (some file order slips, others do not), this figure would have to be used cautiously.

It should be clear, though, that the use of actual measurements or sample measurements eliminates the need to know how order slips and cross references, and even card sets, affect the growth of the catalog. After all, measurements take into account all factors, known and unknown, and are even better than predictions such as the ones mentioned above. Regrettably, we have but one complete measurement and two samples at the moment with which to describe the growth of the card files. The measurement is for all catalogs and the samples for Alderman's author/title file. The latter will be used to approximate the yearly growth of the catalogs, and give the value of the unknown factor.

Two sample measurements of 96 drawers each were taken from the author/title catalog in 1977 and 1979. The following figures were obtained:

Sample 1 (1 July, 1977):

Mean = 9.2604 inches/drawer
Standard deviation = 1.2322

Sample 2 (1 April, 1979):

Mean = 9.5352 inches/drawer
Standard deviation = 0.3897

Using the number of drawers in the catalog having cards at the time of the samples, we can obtain the total number of inches in the catalog at those two times.

1977 3220 drawers x 9.2604 inches/drawer
= 29,818.49 inches in the catalog

1979 3,456 drawers x 9.5352 inches/drawer
= 32,953.65 inches in the catalog

Therefore, the growth during the 21-month period was 3,135.16 inches or 149.29 inches per month, equivalent to a yearly rate of 1791.52 inches. When compared to the rate predicted by Table III, we find that 1791.52 is 25 percent higher than 1437, the figure based on new card sets being added annually.

Does this mean that the unknown factor (yellow order slips, guide cards, cross-references, etc.) accounts for one-fifth⁶ the amount of filing? Probably not. Logic tells us it should be less. We must go back to the sample measurements for further insight.

Any sample is subject to some error because sampling only takes into account part of the universe (in this case the card catalog) being measured. Using a statistical formula, we can determine the accuracy of the samples within a certain range (or interval) of confidence. For these samples we have the following:

$$^6 \text{ \% filing} = \frac{1791.5 - 1437}{1791.5} = \frac{354.5}{1791.5} = 19.8\%$$

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	<u>Mean</u>	<u>Confident Intervals</u>	
		<u>95%</u>	<u>99%</u>
<u>Sample 1</u>	9.2604"	9.26" $\pm$.25"	9.26" $\pm$.32"
	% diff.:	2.7%	3.5%
<u>Sample 2</u>	9.5352"	9.54" $\pm$.08"	9.54" $\pm$ 0.10"
	% diff:	0.8%	1.0%

This means that if we wish to be 95% confident about our Sample 1 results, we can be fairly certain that the mean number of inches per drawer falls between 9.01" and 9.51". Similarly, we can be 99% confident that the Sample 1 results fall between 8.94" and 9.58". The same type of statements can also be made for the Sample 2 figures. In short, accuracy decreases as the level of confidence increases. For that reason, we shall use the 95% confidence interval, which says that Sample 1 has 9.26"/drawer $\pm$ 2.7% and Sample 2 has 9.54"/drawer $\pm$ 0.8%.

Translating this into usable numbers, we can say with 95% confidence that the author/title catalog grew at least 2,071.5 inches during the 21-month period, or as much as much as 4,234.5 inches. The measured figure, as you will recall, was 3,135 inches. This yields:

<u>Growth</u>	<u>Total Inches</u>	<u>Monthly Growth</u>	<u>Equivalent Yearly Growth</u>
Maximum	4,234.5	201.64	2,419.71
Measured	3,135.0	149.29	1,791.43
Minimum	2,071.5	98.64	1,183.71

Going back to Table III, and using the 10,590 inches available, we can compute three more years-to-go predictions, based on the sample measurements:

	<u>Years to Go</u>
Maximum growth	4.38
Measured growth	5.91
Minimum growth	8.95

It should be apparent that even with a small fluctuation ($\pm 2.7\%$) from the mean of the measured sample, the result is a wide range for the number of years before the author/title catalog is full. To be on the safe side we could use maximum growth, yielding a minimum number of years to go. Yet, maximum growth, 2,419.71 inches/year, is 68% higher than the rate of growth based on card sets alone (TABLE III). Logic tells us that this is too high.

Minimum growth, 1,183.71 inches/year, is below the rate of growth predicted by new card sets added, and can also be rejected as the value to accept. We know intuitively that the real answer is somewhere above or below the measured value, but is probably not the maximum or minimum value. Therefore, we will use the measured value of growth, knowing it is a good guess, though not an exact number.

This still leaves the question of the unknown factor of items filed which are not card sets. Is it one-fifth of all filing? There is no way to tell for sure even though we might guess it is between 10 and 20 percent of all filing. One problem could be that the sample value for the number of cards per set is actually too low. In that

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case the number of cards due to card sets can be revised upward, and the unknown factor could be revised downward.

In any case, column 8 on TABLE III (years to go) should be revised to reflect the unknown factor. One way would be to apply the figure obtained from the Alderman author/title sample, 20 percent, to all catalogs. The question arises, however, is 20 percent applicable to all catalogs? After all, numbers of cross-references, guide cards, order slips, etc. vary widely from place to place. Also, one wouldn't apply this figure to the subject catalog, which doesn't have as many strange slips as the author/title file. Nor would shelflists be affected.

Most likely, a minimum of 10 percent should be added to each catalog's growth, and a maximum of 20 percent. The following (TABLE V) is the result of adding the unknown factor to TABLE III.

Depending on the growth rate in column (1), the added factors of 10 and 20 percent affect the outcome in various degrees. It is fairly safe to say, however, that column (6), the worst case, is a good indication of how long before our catalogs will be full. This excludes, of course, any additional unknown factors such as massive transfers, etc.

TABLE V.^a TABLE III ADJUSTED FOR THE UNKNOWN FACTOR

	(1)	(2)	(3)	(4)	(5)	(6)
Alderman A/T	1437	7.4	1596	6.6	1796	5.9
Sci/Tech	391	11.8	434	10.6	489	9.4
Astronomy	9	20.7	10	18.6	11	16.9
Bio/Psych	27	13.6	30	12.2	34	10.8
Chemistry	11	32.3	12	29.6	14	25.4
Engineering	33	4.9	37	4.3	41	3.9
Math	22	7.5	24	6.9	28	5.9
Physics	18	0.8	20	0.7	23	0.7
Commerce	19	17.7	21	16.1	24	14.0
Education	106	6.4	118	5.8	133	5.1
Fine Arts	246	4.3	273	3.9	308	3.4
Music	52	14.0	58	12.6	65	11.2
Rare Books	121	7.6	134	6.8	151	6.1

Legend

- Column (1) Growth rate annually (inches) based on card sets added (see TABLE III)
- Column (2) Years to go based on (1)
- Column (3) (1) + 10% (unknown factor)
- Column (4) Years to go based on (3)
- Column (5) (1) + 20% (unknown factor)
- Column (6) Years to go based on (5)

^aFor those catalogs that would be affected by the "unknown factor."

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Conclusion

Those who know something about cataloging, and those of us who don't, know that there are even more factors that affect catalog growth. For the record, these include transfers and withdrawals, changes in the cataloging rules (for example, more or fewer subject headings for certain types of books), buying patterns, book budgets, inflation, etc. There is really little that can be done to account for all these factors which play a role, however small or large, in this question.

What does all of this mean? It means we can give a ballpark estimate of catalog growth, and say with some certainty how soon it will be before the catalogs are full. It means we can plan to some extent on when new cabinets are needed and where they can be placed. Finally, it gives us insight into the question of how much longer we can go on maintaining our present catalogs. We now have over 7 million cards in our catalogs. In seven years that figure will be 10 million, based on current growth rates. We could reach 10 million sooner or later depending on how the future of the card catalog is handled, how book budgets are maintained, and a dozen other reasons.

For Alderman's catalogs, we can say with some confidence that the author/title catalog will be full in about 6 years. This indicates that we are not immediately facing a crisis situation in Alderman Library or even in most branches. If the decision was made not to close in 1981, we could hold out to about October, 1984 (6 years from October, 1978, when the measurements were made). At that point

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a choice would have to be made to buy new cabinets or close down the catalog, if it hasn't been done before then for other reasons, say the completion of an on-line card catalog.

Of course, this five or six year grace period (three years from 1981) does not mean no problems. As the months pass, shifting the entire catalog will become necessary more and more often. This is a costly and time-consuming exercise,⁷ necessitated by the fact that many drawers will be full in two or three years instead of five or six.

The Committee on the Future of the Card Catalog will have to weigh all the factors, catalog growth, the necessity to shift, and other catalog maintenance tasks, before a decision whether or not to close can be made.

Comments on this report are welcome.

⁷The shift of the author/title catalog in the winter of 1978-79 required 493 hours to complete.

Appendix I. Derivation of the number of cards per set.

The number of cards per card set was determined from a random sample of 3,346 records taken from the Library's OCLC archive tapes. The following mean values were found:

	<u>cards/set</u>
Author/Title ¹	2.40
Subjects	1.73
Shelflist	<u>1.00²</u>
Total	5.13

These figures were revised upward slightly for the purposes of calculation and to account for possible fluctuations due to sampling error. It was thought that rounding up (making a worse case) was safer than rounding down.

Therefore, for Alderman the following numbers were used:

	<u>cards/set</u>
Author/Title	2.50
Subject	2.00
Shelflist	<u>1.00</u>
Total	5.50

For the branch libraries, a slightly higher figure was used for the number of subject headings per title, to reflect the emphasis on special subject collections found in each branch. The sciences, for example, tend to have more subject headings for their materials than do the general collections in Alderman. The exact difference is not known, but 25% more was thought to be a good guess. The result is that the number of cards for a branch library is considered, for the purposes of this exercise, to be

	<u>cards/set</u>
Author/Title	2.50
Subject	2.50
Shelflist	<u>1.00</u>
Total	6.00

Naturally, these figures will vary from library to library, but since breakdowns by library are not possible at this time, the above numbers will be used.

1. Includes author and title main and added entries.
2. Is actually slightly higher due to occasional multiple-card main entries. An actual value cannot be easily determined from the archive tapes.

The sample figures can be verified by the following method. If we take the ratio of the number of inches of cards in the public catalog (PC) to the number of inches of cards in the shelflist, we should get a figure comparable to the ratio of the number of cards per set in the public catalog (determined by the sample) to the number of cards per set for the shelflist (assumed to be 1.00).

Therefore,

<u>Sample</u>	$\frac{\text{PC cards (\#)}}{\text{Shelflist card (\#)}} = \frac{4.13}{1.00} = 4.13$
<u>Measurements of catalogs</u>	$\frac{\text{PC cards (inches)}}{\text{Shelflist cards(inches)}} = \frac{41,851''}{11,212''} = 3.73$

The difference of only 0.40, or 10.7%, shows that the sample figure can be accepted as being fairly accurate. The difference between the two figures indicates that the number of cards per set in 1979 is slightly larger than card sets have been in the past.

CATALOG GROWTH: AN ADDENDUM

Soon after the report on catalog growth was distributed, a contradiction was discovered with regard to the number of inches in the author/title catalog in Alderman. Because this discrepancy has implications for the number of years remaining before the author/title catalog is full, it will be examined in some depth in this supplement section. Further, as will be shown, the contradiction in figures also illustrates the inherent difficulty in making measurements of any card catalog.

In particular, the following problem was discovered by another member of the Committee. The measured inches in the author/title catalog (Table III) on October 1, 1978, totaled 30,882; the sample taken on April 1 (page 10) gave 32,953.65 inches. A close examination of these two figures shows that one or both are incorrect. The difference between the two is 2,071 inches, or the growth of the catalog during the intervening six months. Dividing by six, we obtain a monthly rate of 345 inches, which is far above the 150 inches per month predicted by the samples and card sets added.

The question is, where did things go wrong? The answer is that a number of factors are involved. The first problem is the Squeeze Factor, or how much pressure an individual exerts on the cards during the compression for measurement. For example, it is very easy to vary the length of the cards by one-quarter inch by squeezing harder or loosening one's grip. With extra effort, even greater variations can be produced. To illustrate, squeezing a little extra and shortening each

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drawer by one-quarter inch lowers the number of inches in the author/title catalog by 864. A variation of ± 0.3 inches per drawer means an error of 1,037 inches.

In short, depending on the person and their personal Squeeze Factor, large variations from the actual figure can result. But what is the actual figure? No one will ever know. The only really accurate way to measure the catalog would be to remove the cards from each drawer and place them in some device that would compact them with a consistent amount of force. Then the cards would be measured by some type of vernier micrometer for an exact reading. Unfortunately, such methods are impractical for the Library.

Another difficulty is the measurement process itself, which is also prone to error. It is easy to let the ruler slip an eighth of an inch or so, or for the cards to move a bit. The combination of the two means some error will result. As with the Squeeze Factor, a small error per drawer means a large discrepancy overall.

Still another factor which can cause error is the measuring scale being used. Using inches and rounding to the nearest quarter inch, the technique used in the October measurement, is not the best way to obtain accurate figures. Measurements should have been made in millimeters and then converted to inches. Unfortunately, this oversight probably affected the results.

Finally, one must consider the possibility of numerical error in adding up the total number of inches for 3,456 drawers. Even with careful checking and re-checking, this type of mistake can still occur.

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Each of these factors varies from person to person, and from day to day for one individual. It's easy to see that it's easy to be inaccurate. Does this mean that all the work measuring was a waste of time? No, because we still have a good estimate of the catalog size and growth, despite the error involved.

Returning now to the basic question, what figures are incorrect, the measurement in October 1978, or the sample measurements? Both are prone to exactly the same problems, the squeeze factor, the measuring error, measuring scale, etc. For example, the confidence intervals for the sample measurements in the original report (pages 9-13) assume that the measurements were accurate. Therefore, since we cannot say with certainty how accurate the measurements were, we cannot say that the confidence intervals are exactly right. Therefore, the samples could be off even more than the confidence intervals state.

An additional sample^a was taken on May 18, 1979, to further check the original measurement and samples. It compared favorably with the two previous samples which indicated a growth rate in the author/title catalog of 150 inches per month. If indeed this growth rate is correct and the number of inches in the catalog based on the sample is fairly accurate, then a revision should be made to the October measured figure of 30,882 inches.

<u>Sample 1</u>	(1 July 77)	29,818.49 inches
<u>Total measurement</u>	(1 October 78)	30.882.00 inches

<u>Sample 2</u>	(1 April 79)	32,953.65 inches
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^ausing millimeters

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Using the monthly growth of 149.29 inches, we can now revise the second figure:

<u>Sample 1</u>	(1 July 77)	29,818.49 inches
<u>Total measurement</u>	(1 October 78)	32,057.84 inches
 <u>Sample 2</u>	 (1 April 79)	 32,953.65 inches

If this is correct, then we must adjust the figures in Table III and Table V. For the author/title catalog, 32,058 inches used means 9,414 inches available, not 10,590. Using the growth rate of 1796 inches per year (Table V, column (5), line 1), then the figure on the number of years to go before capacity is reached becomes 5.2 years. In other words, the catalog would become full about nine months sooner.

In summary, although we don't know exactly how full the catalog is, we can provide a fairly reasonable estimate of the situation, despite the several factors which can introduce error into the calculations. In addition, we can be fairly certain that the author/title catalog will be full sometime between five and six years, depending on which figures one cares to use.

R.A.S.
5-30-79

/kc